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Physicians' Online

TM

Business Summary

PHASE I

Medical Knowledge Management

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Christian Mayaud, MD
Chief Executive Officer



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PHYSICIANS' ONLINE, Inc.

230 Park Avenue • #C-301 • New York • New York 10169
212/338-9343 | 212/724-2032 | Fax: 212/724-0849

FALL 1999

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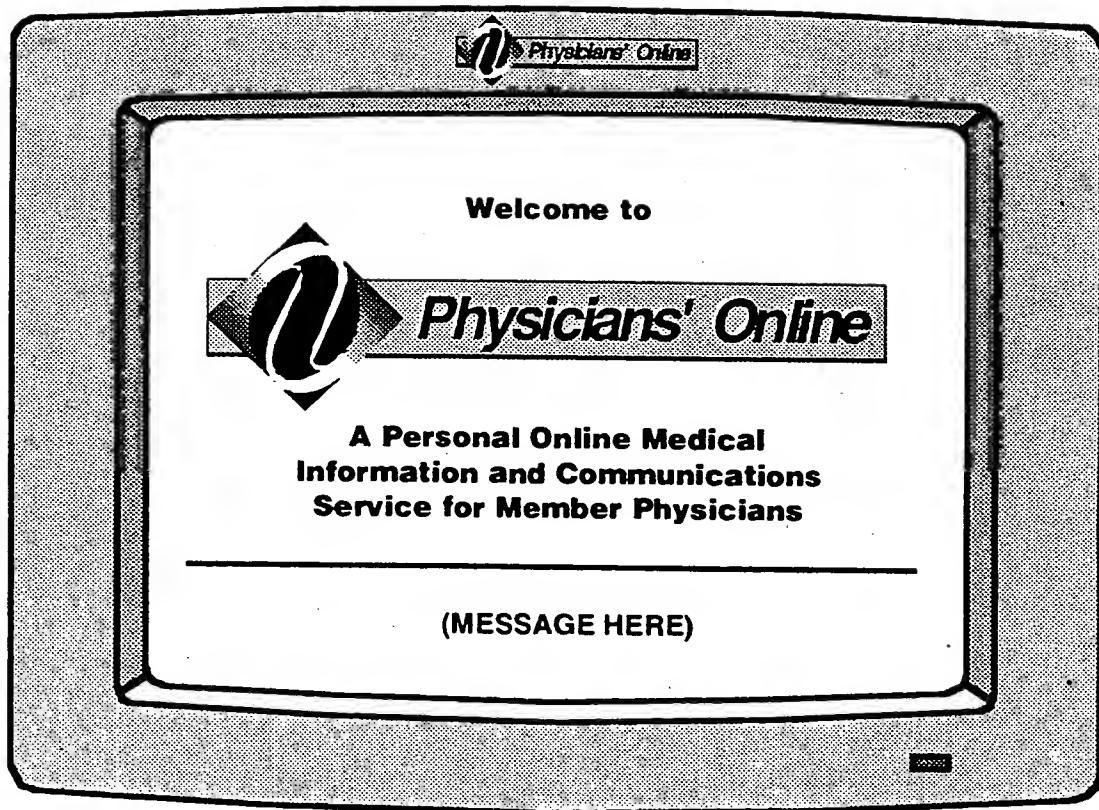
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"The success of managed care will probably depend on the ability ... to influence physicians' choices in the direction of increased value."

-- John K. Iglehart. Managed Care. *N Engl J Med* 1992; 327: 742.

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I - The Executive Summary

Physicians' Online is a personalized online medical information and communications service dedicated to empowering physicians with the tools essential to advance the quality and control the cost of health care through informed decision-making.

Physicians' Online ("Company") is an innovative new electronic medium designed to evolve into a comprehensive national medical information and communications network servicing the entire health care industry. The Company's online information products and communication services provide physicians with powerful tools to manage Medical Knowledge, Prescriptions, and Patients. *Physicians' Online* provides a distribution outlet for third-party produced information products and services. *Physicians' Online* also provides valuable proprietary information services to other industry participants including managed care organizations and the pharmaceutical industry.

Phase I - Medical Knowledge Management

Online medical information and communication services which are readily accessible and free of charge to member physicians through optional online advertising support. The Company has assembled the most powerful, yet user-friendly, collection of medical information tools available from leading third-party sources. The core information products target three key areas of identified information need, including medical literature (MEDLINE), medical diagnosis (QMR), and drug information (USP). *Physicians' Online* is being developed in cooperation with major medical societies, pharmaceutical manufacturers & marketing organizations, hospitals, managed care organizations, and leading technology & third-party content providers.

Implementation: 1993 through 1994

Phase II - Prescription Management

Online prescription fulfillment and cost containment programs made possible through the use of "Smart Electronic Prescription Pads" (PDAs). This network is being developed in cooperation with managed care organizations, hospitals, pharmacists, pharmaceutical distributors, leading technology providers, and other health-care participants.

Implementation: 1994 through 1996

Phase III - Patient Management

Online patient information for efficient retrieval and transaction processing resulting in enhanced clinical and administrative efficiency and cost-containment. This network is being developed in cooperation with corporate employee benefits programs, private health insurance carriers, out-patient laboratories, electronic claims processors, installment credit organizations, hospitals, and other health care participants.

Implementation: 1995 through 1997

The Company's competitive advantage is based on its ability to attract physician use. Founded by practicing physicians with extensive experience delivering practical information products to busy clinicians, the Company has developed a market-driven product strategy designed to win maximum professional acceptance and use. The Company is establishing critical strategic alliances with leading participants in every major health care market segment. The Company is currently working with several leading content and service providers to develop new products and services for this expanding multi-billion dollar market opportunity.

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Physicians' Online: 5 Year Plan

To empower physicians with the tools essential to advance the quality and control the cost of health care through informed decision-making.

	Phase I	Phase II	Phase III
Time Frame	0 - 2 yr	1 - 4 yr	3 - 5 yr
Essential Tools	Medical Knowledge Management	Prescription Management	Patient Management
Vehicle	Physicians' Online	Pharmacists' Online Pharm Reps' Online Formularies Online Managed Care Online	National Health Card Network
Potential Membership	500,000 physicians 10,000 pharmaceutical execs	300,000 physician offices 100,000 pharmacies 50,000 drug reps	250 million patients 10,000 hospitals other health care participants
Core Markets	MEDLINE Rx Micromarketing	Prescription Fulfillment Rx Cost-Containment	Patient Administration Cost-Containment Programs
Market Size	\$50 million / \$7 billion	>\$70 billion	>\$500 billion
Market Size/MD	\$1000 / \$15,000	>\$150,000	>\$1,000,000
Secondary Markets	<ul style="list-style-type: none"> Clinical Databases Decision-Support Tools News & Financial Services Special Interest Forums other areas of identified need 	<ul style="list-style-type: none"> Home Care Managed Care Formularies Pharmacy Network "Electronic Detailing" & Rep Support 	<ul style="list-style-type: none"> Electronic Patient Record Outpatient Laboratory Transactions Patient Health Maintenance
Main Revenue Sources	<ul style="list-style-type: none"> Pharmaceutical Advertising Pharmaceutical Micromarketing Information Membership & Usage Fees 	<ul style="list-style-type: none"> Prescription Processing Micromarketing Information Membership & Usage Fees 	<ul style="list-style-type: none"> Patient Transaction Processing Communication Services Micromarketing Information Membership & Usage Fees
Competitive Advantage	<ul style="list-style-type: none"> "Medical Info Vending Machines" Sophisticated MD Targeting ("Ad Wizard"/ "Smart Ads") Installed Terminals, PDAs, & PCs Computer-Sophisticated Members Medical Society Support Pharmaceutical Industry Support Third-Party Office Systems Support Pharmaceutical Executives' Online User-Friendly Interface Proprietary Text-Retrieval Software Proprietary Psychometric Mktg Data 	<ul style="list-style-type: none"> "Smart Electronic Prescription Pads" (PDAs) Installed Terminals, PDAs, & PCs Automated Prescriber Assistance Programs Proprietary managed care applications National Electronic Formularies Proprietary Prescriber Profiling Patient Prescription Profiles Proprietary Psychometric Marketing Data 	<ul style="list-style-type: none"> "National Health Card" Installed-base of diverse POS/PON entry-points linking integral industry participants Electronic Patient Transactions Network Third-Party Office Systems Support Hospital Systems Support Cellular Communications link to Physicians
Strategic Alliances	<ul style="list-style-type: none"> Medical & Professional Societies Pharmaceutical Companies Pharmaceutical Marketing Cos Prescription Data Marketing Companies (IMS/ MMG/ PMS) Third-party Content Providers (NLM/ Camdat/ USP) Medical Office System Companies Technology Providers (CompuServer/ Sybase/ Conquest/ Coconut/ Apple/ Sun/ HP/ Cube) 	<ul style="list-style-type: none"> Prescription Fulfillment Companies (Medco) Pharmacies/Pharmacist Societies Managed Care Organizations HMOs/ PPOs/ IPAs Hospital Chains Hospital Formularies Corp Employee Benefits Programs Medical Office System Companies Technology Providers (AT&T/ Apple/ EO/ Motorola/ HP) 	<ul style="list-style-type: none"> Corp Employee Benefits Programs Private Health Insurance Carriers BC/BS/Medicaid/ Medicare Out-Patient Labs (MetPath/ BioScience/ SKF/ NHL) Outpatient Testing Companies Installment Credit Organizations Electronic Claims Processing & Clearing Houses (NEIC/ EDS) Medical Office & Hospital Systems Companies
Critical Technologies	<ul style="list-style-type: none"> Systems Integration of existing hardware & software technology Packet Data Network technology Simple Text Retrieval Software Third-party Content Development 	<ul style="list-style-type: none"> "Personal Digital Assistants" (PDAs) Data network technology Proprietary PDA applications development Personal Info Management (PIM) 	<ul style="list-style-type: none"> Systems Integration Proprietary patient administration & cost-containment applications development Cellular data network technology
Infrastructure Milestones	<ul style="list-style-type: none"> 150,000 physician members 5,000 hospital members 5,000 hospital-based terminals 5,000 PDAs in Physician Offices 150,000 additional POL software installations 	<ul style="list-style-type: none"> 300,000 physician members 10,000 hospital members 20,000 hospital-based terminals 100,000 PDAs in Physician Offices 10,000 mobile PDAs 500,000 additional POL software installations 	<ul style="list-style-type: none"> 500,000 physician members 10,000 hospital members 50,000 hospital-based terminals 300,000 PDAs in Physician Offices 400,000 mobile PDAs 800,000 additional POL software installations
Infrastructure \$	\$10,000,000	\$50,000,000	\$250,000,000
Infrastruct\$/MD	\$100	\$200	\$500

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II - The Concept

The Physician Need

Medical practice has always been information intensive. However, the explosive growth of medical knowledge has become a two-edged sword. While it provides physicians with the knowledge to guide their decision-making, it has become increasingly difficult to gain access to this unwieldy disorganized mass of rapidly growing information. The sheer volume of medical information today has far outstripped the capacity of traditional methods, such as medical libraries, textbooks, and journals, to meet the growing needs of today's physician.

Powerful computerized medical information tools have been developed to meet these needs. However, fundamental economic factors in health-care have inhibited their widespread use. The information products exist...the means of payment does not. Unlike the legal profession, the medical profession can not pass on the cost of information services to the health-care consumer due to the fixed reimbursement system. Computer systems that don't directly contribute to the bottom-line, are hard to justify for cash-strapped institutions and physicians who are facing a squeeze between falling reimbursements and rising costs.

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Physicians' Online: The "Win-Win" Strategy

Physicians' Online is positioned to simultaneously meet the needs of multiple markets --

Physicians are provided with personalized online medical information & communications services on demand, at point-of-need, and free-of-charge. All the information products are high-quality, readily-accessible, easy-to-use, and free-of-charge. Online product messages are personalized to the needs of the individual physician.

Pharmaceutical companies are provided with a powerful, sophisticated, cost-effective, precisely-targetable, fully-accountable, non-coercive, risk-free, "Pay-per-View" advertising medium and a significant opportunity to generate goodwill.

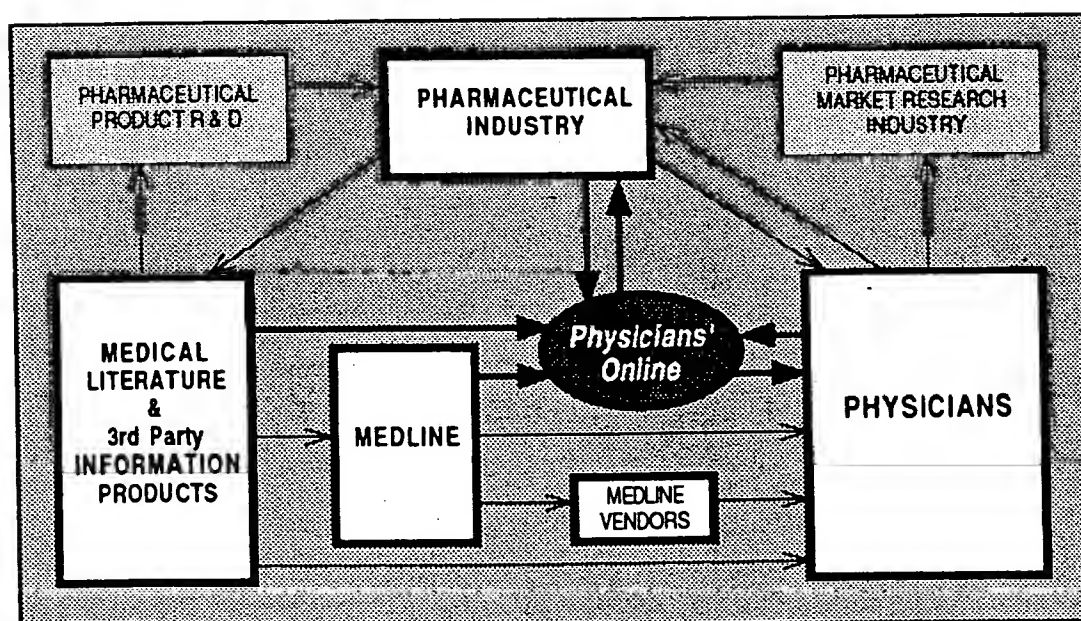
Pharmaceutical marketing industry is provided with a new medium capable of precise physician targeting based on demographics as well as prescribing practices and a new source of proprietary psychometric data to enhance their micromarketing tools.

Medical Information industry is provided with a high-volume platform to profitably distribute their products and services to physicians.

Medical Societies are provided with their own online Medical Society Forums and other benefits for their membership -- free-of-charge.

Medical center libraries are provided a source of MEDLINE and other information products and services -- free-of-charge.

Physicians' Online Positioning



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III - The Service

Our Online Information Products & Services

To attract physician use, *Physicians' Online* has assembled the finest collection of online information products available from leading third-party medical information providers. Our core products target three key areas of identified information need --

- medical literature (MEDLINE),
- medical diagnosis (QMR), and
- drug information (USP Drug Info).

Unlike previous efforts to establish new advertiser-supported media, *Physicians' Online* does not have to "create a market" for new products and services. *Physicians' Online* delivers a well-known information product (MEDLINE) for free which physicians currently use more than 3 million hours per year (at fees ranging up to \$45/hr).

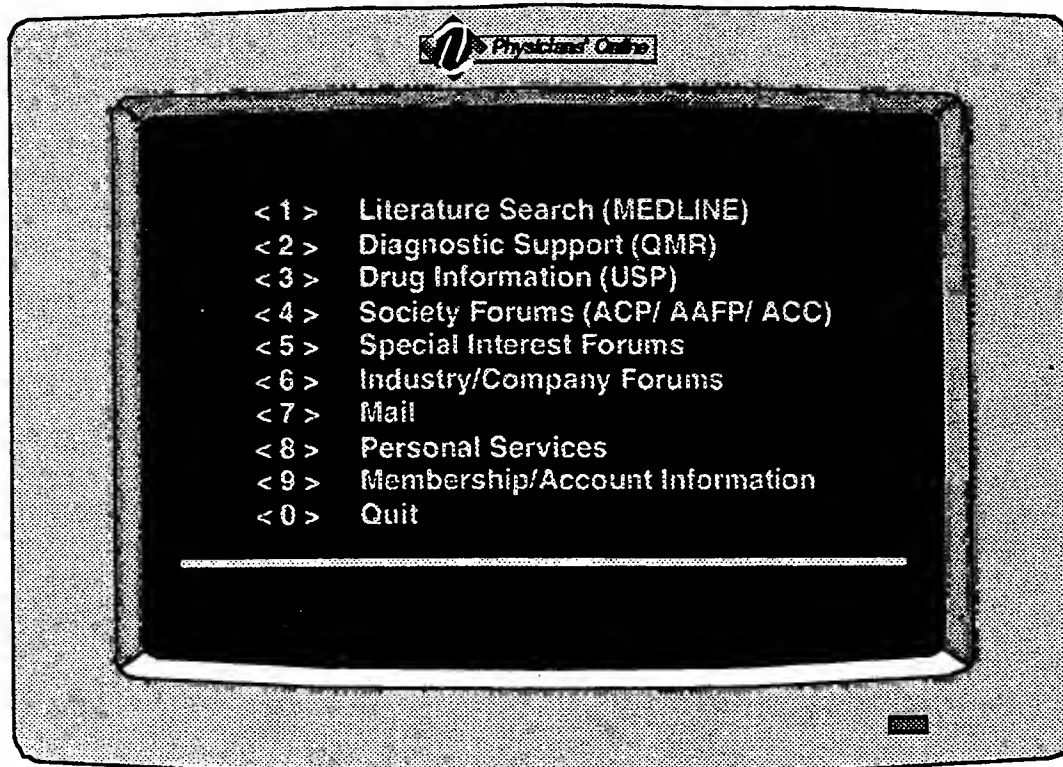
Although "FREE MEDLINE" is the single most persuasive reason for physicians to switch to *Physicians' Online*, QMR (a medical diagnostic decision-support tool) and USP Drug Info (a comprehensive drug information resource) add significant clinical utility to our introductory offering. They cost relatively little to implement and they position *Physicians' Online* as a comprehensive "one-stop shopping" information resource for physicians. Although the demand for information products other than MEDLINE is currently small, we anticipate rapid growth in other online information products & services as physicians become more familiar with our system and routine *Physicians' Online* use becomes the *de facto* "Standard of Care."

Another significant incentive for physicians to use *Physicians' Online* regularly is that it keeps track of the online time spent on education activities. So, *Physicians' Online* becomes a significant source of Continuing Medical Education (CME) credit for active members. (CME

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credits are required for maintaining hospital admitting privileges, professional licensing, specialty certification, etc.)

The design of each module maximizes ease-of-use and relevance to clinical practice. Casual, as well as sophisticated, users quickly master the system using plain English commands. No steep learning curves or Byzantine commands to remember.



All online products and services are free-of-charge to member physicians who accept the online advertising option. If the advertising features are turned off, online products and services are competitively priced on a "Pay-as-You-Go" or "Fixed-Fee-for-Unlimited-Use" basis.

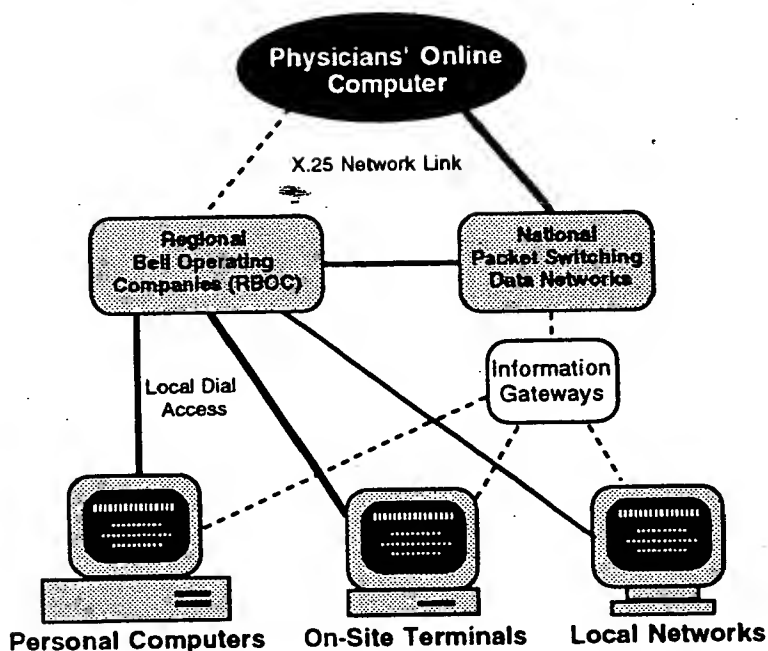
Comprehensive online communication services include --

- electronic mail,
- bulletin boards,
- special interest forums,
- special society boards,
- "live" conference rooms,
- libraries,
- paper specific comments boards,
- journal clubs,
- journal specific forums,
- electronic publications,
- personal clipping services,
- document delivery services,
- news & financial services,
- pharmaceutical customer support boards,
- member/alert features,
- FAX capabilities,
- software libraries,
- online customer support, and
- online documentation & help.

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Our Network

Our strategy maximizes physician use of electronic information resources by making them widely available, easy-to-use, and free-of-charge. By using a national data network with local access numbers, *Physicians' Online* can be accessed from any computer equipped with a modem using standard communications software or our own dedicated software.



Our Communications Software

Our software provides additional functionality and is distributed free-of-charge to all members. It has an easy-to-use, menu-driven, "Graphical-User-Interface" (GUI) and is compatible with all major computer operating systems – including DOS, Windows, Macintosh, and UNIX. It supports black & white and color graphics and provides mouse, as well as keyboard, control.

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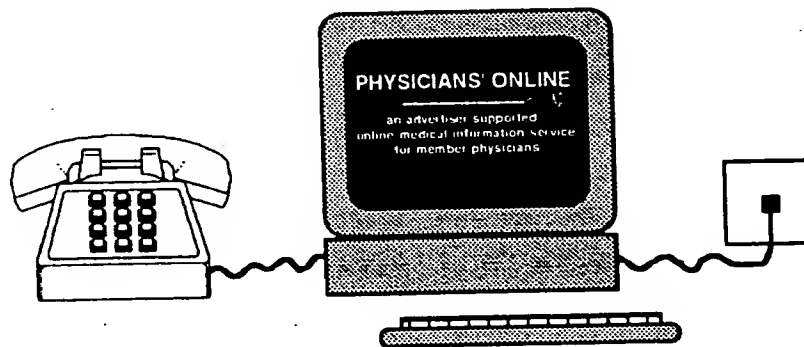
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Our On-Site Terminals

Most clinical questions do not arise at a time or location convenient to computer access. The practice of medicine keeps physicians moving between offices, clinics, and various hospital locations throughout a typical day. This is why physicians require pagers to be reached. This is also why desk-bound computers haven't helped physicians with their daily work -- physicians don't work at their own desks! A physician's office computer is usually being used by staff for office management tasks. In the hospital, computers, when available, are dedicated to specific administrative tasks. The hospital library is often closed or not conveniently located and usually has only limited, if any, computerized information resources. And even if the physician has a home computer equipped with modem, communications software, and an online search account, the physician is often too tired and the question is no longer as pressing as it was during the day when the information was needed for clinical decision-making. No wonder less than 30% of the clinical questions that arise during patient care are ever answered.

Medical Information Vending Machines & Membership Kiosks

To increase physician use, *Physicians' Online* will distribute dedicated terminals to high volume sites -- such as emergency rooms, medical libraries, physician lounges, clinics, group practices. By facilitating access, at point-of-need, these workstations function as "medical information vending machines" and "membership kiosks" -- satisfying information appetites at strategic locations throughout the health-care environment and automatically recruiting new membership. Even physicians without personal computer systems can routinely access our system using these on-site terminals.



For example:

A physician's daily routine can include a stop by the hospital-based terminal -- to get a few clinical questions answered on a problematic case, check the medical literature on a topic of interest, order a reprint, check his personal clipping service for new abstracts, check a patient's laboratory results, register for a conference, renew a medical society membership, check the latest travel immunization recommendations, pick up electronic mail, check out information on a new antibiotic, order drug samples, etc.

The 5,000 major US hospitals offer a total installed-base potential of over 20,000 terminals. In addition to direct distribution of terminals by *Physicians' Online*, pharmaceutical sponsors, using their hospital-based sales forces, have an opportunity to donate terminals (customized with their own marketing messages) to their client sites. A large installed-base of on-site terminals generates goodwill for pharmaceutical sponsors, creates a "strategic omnipresence," increases physician membership & total online demand, acts as a barrier to competition by gaining early control of the "Physician Desktop," and serves as entry points into our emerging health-care communications environment.

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Our Membership

Any medical professional who can legally write prescriptions qualifies for membership, including --

- physicians,
- physician assistants,
- physicians-in-training,
- osteopaths,
- podiatrists,
- oral surgeons, and
- dentists.

Members have an opportunity to use any information product on our system, entirely free-of-charge, by allowing online advertising to be shown. These ads are not intrusive or disruptive since they are restricted to the bottom 1/8 of the screen and change only four times per minute. Members can engage in online activities without any interruption from the advertising which is shown simultaneously.

Physicians can access *Physicians' Online* from any computer equipped with a modem and communications software or from any on-site terminal or personal computer equipped with our dedicated software. Physicians can order our free dedicated communications software package and low-cost modems directly from *Physicians' Online* using our 800 Membership Support Line or anytime they are online.

To become a member, physicians fill out an online membership questionnaire the first time they use the system. After completing the questionnaire, a unique membership number (their social security number) and a password are assigned to each physician. From then on, members merely type in their number and password and they have full access to the system.

Since each physician has his own membership number and data file, and each terminal has its own identifier number, the system always knows who is using the system, where he is, and what he is using the system for. This provides a unique opportunity for pharmaceutical advertisers to precisely target online advertising and collect psychometric marketing data. Member activity data also provides *Physicians' Online* with continuous feedback to constantly monitor and refine our ongoing marketing and product development efforts.

Our "Membership" Growth Strategy

Current MEDLINE users are a secure initial membership-base to grow from. As computer-sophisticated physicians, MEDLINE users are more likely to use other new information products & services. They are also "early adopters" of other new technologies and pharmaceuticals, and, as "Medical Opinion Leaders", they are influential with other physicians. MEDLINE users are usually internists, family practitioners, general practitioners, and cardiologists, which are the highest prescribing physician specialties.

Physicians' Online is dedicated to maintaining a quality medical information service with responsive membership support services. As our company name -- *Physicians' Online* -- implies, we want our members to feel they are "members" of an online information "service" that is really "theirs" and not just another "customer" of a medical information "company".

As we successfully convey this image to our initial membership and carefully nurture our member relations with quality products and support, our members will be our most potent marketing weapon -- recruiting new membership, leveraging our marketing into new clinical sites, and securing our market-share against future competition.

Ultimately, our success rests on the physicians' recognition that *Physicians' Online* is a quality information service that maintains the integrity of its information products and clearly separates the needs of physicians from the demands of pharmaceutical advertisers. Promotional information must

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be clearly distinguished from all other information products. Information products can not be contaminated, in any way, by promotional material.

As a result --

- No exclusive covenants will be given to any pharmaceutical company that would compromise the integrity of our information products and our credibility to physicians.
- No exclusive advertising rights will be granted since this would create an opportunity for potential online competitors.

In summary, our basic strategy is to make physicians feel like "members" not "customers" and then to turn our "members" into "evangelists."

This is a powerful marketing strategy, and, for the physician market place, this may be the only strategy that can work. Physicians are a very fraternal order and expect to "belong." They are "members" of their medical profession, their subspecialty, their hospital attending staff, their medical society, their group practice, their medical school, their subspecialty, etc. Physicians will expect to be members of *Physicians' Online* -- We can't disappoint them.

The Challenge of Sophisticated Users

The most important influence on physician behavior is "word of mouth." Physicians do very little without first consulting their colleagues, even informally. Nowhere is this more true than with computer technology. Physicians do not generally feel comfortable with computers. So, most physicians are keenly aware of which colleagues use computers and rely heavily on their "technical" advice. Before making any purchase, physicians generally consult these "computer savvy" colleagues first.

Computer-sophisticated physicians are the easiest group to get to use our system since they are always looking for new uses for their computers. And since these physicians tend to do MEDLINE literature searches themselves, they realize immediate savings by switching to *Physicians' Online*.

Although they are the "easiest-to-get-to-use" our system, they are also the "hardest-to-please" since they have an instant basis of comparison with the systems they are currently using. They will immediately run head-to-head comparison literature searches before making the switch. Therefore, we need the most sophisticated online system possible, right from the start, since our initial users are the most sophisticated physicians.

Since computer-savvy physicians are those most likely to use our system initially and they are also influential with the rest of the physician market, it is critical to the success of *Physicians' Online* to win their support early on. By winning their support, we have won the soundest membership base for growth and a bullet-proof barrier to any future competition.

This creates a potential risk during our launch phase. If we make any false claims, our users will know immediately. Anything short of the highest quality online system will disappoint and ultimately hurt us. We know that no system is perfect. All systems evolve over time. There are "bugs" and other performance problems that need to be fixed. How do we suspend their criticism and, better yet, get them to help us improve our system? *The Beta-Test Phase Membership Recruitment Program*.

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Beta-Test Phase Membership Recruitment Program

By recruiting computer-sophisticated physician users for our beta-testing phase, we accomplish several key objectives --

- Convert the "hardest-to-please" physicians into "co-developers" of our system.
- Temper any initial criticism by calling our initial system a "beta-test version" and thereby allow us to work-out any initial bugs with an understanding group of sophisticated users.
- Make these "Beta-Testers" feel special and highly valued. Make them feel that their feed-back has a positive influence on the development of *Physicians' Online*. Eg., "Participate in the development of the most revolutionary advance in physician communications since the advent of the personal pager -- *Physicians' Online*."
- Obtain valuable last minute user-feedback for fine tuning our system before its "official" launch date.
- Leverage our future marketing by "seeding" the medical community with active computer-sophisticated members who form our initial membership-base and act as membership recruiters, clinical site administrators, and informal on-site technical support.
- Set a tone of close cooperation with our early membership. Developing a friendly and responsive membership / technical support service is the key step to win physicians' long-term loyalty and helps convert our members into *Physicians' Online* "Evangelists".

A prolonged beta-test phase allows us to get up to speed without becoming overwhelmed with the sudden increase in system utilization a "launch date" would create.

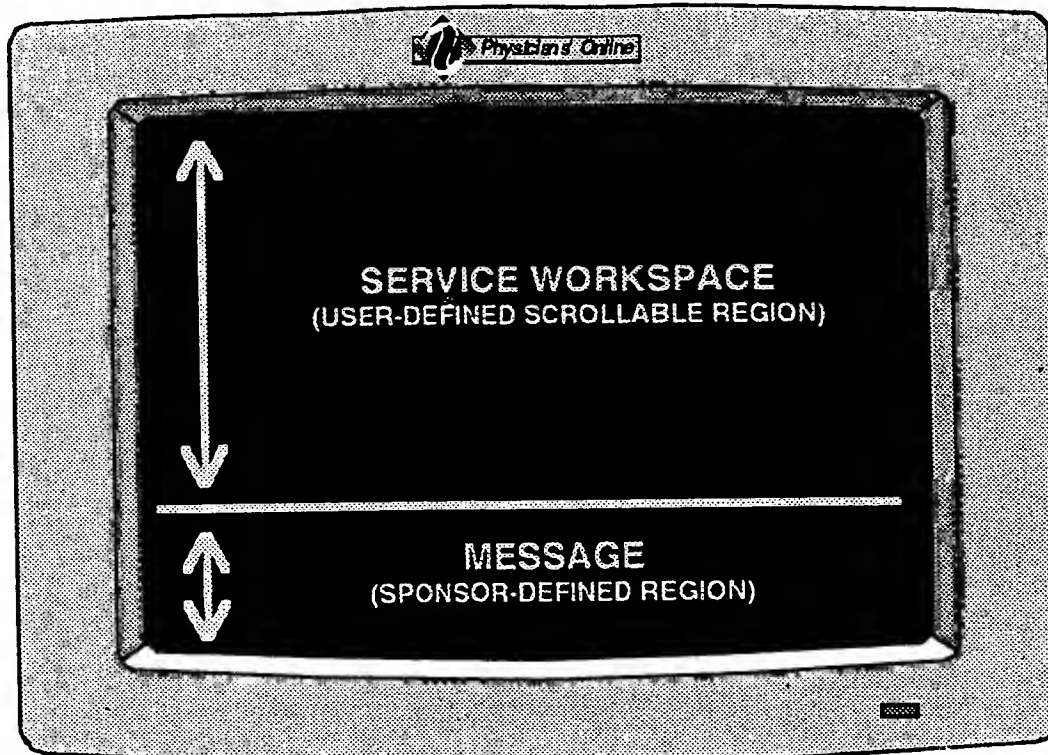
Although it will appear that only a limited number of beta-testers will be granted online privileges at this stage; in fact, there is no such limit. We will expand this program to rapidly capture most computer-sophisticated physicians.

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Online Advertising

Physicians' Online provides member physicians with an optional "advertising shell" through which any third-party information product or communications service can be simultaneously distributed to them free-of-charge. Members are never interrupted by online advertising since it is restricted to the bottom 1/8 of the screen and changes only four times per minute.



As a "Pay-per-View" advertising medium, we are motivated to increase physician demand by making our system more useful and responsive to our members needs. In addition, third-party information providers are motivated to keep their online products useful to physicians since they are paid fees based on actual use.

In other words, "Pay-per-View" advertising enables *Physicians' Online* to remain responsive to the needs of physicians since the more physicians use our system, the more money we make.

MEDLINE User Characteristics

Studies show that --

- The heaviest MEDLINE users are Internists (IM), Family Practitioners (FP), General Practitioners (GP), and Cardiologists. These physicians are also the heaviest prescribers -- writing over half the US prescriptions in 1991.
- Physicians who regularly use computers are "early adopters" of new products.
- MEDLINE users are "Medical Opinion Leaders" and influential with their peers.
- 70% of MEDLINE searches are run by physicians themselves -- another 25% are run for physicians by search intermediaries such as medical librarians, other physicians, medical students, etc.
- When using computerized information products in general, physicians spend 90% of their time using clinical information databases --
 - 65% MEDLINE
 - 30% drug information
- 60% of MEDLINE searches involve patient care.
- 50% of MEDLINE searches concern therapy.

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So, *Physicians' Online* advertising is displayed to influential, receptive, and high-prescribing physicians, staring at a computer screen, actively seeking therapeutic information – the most effective time to suggest a new treatment or remind them of an old treatment!

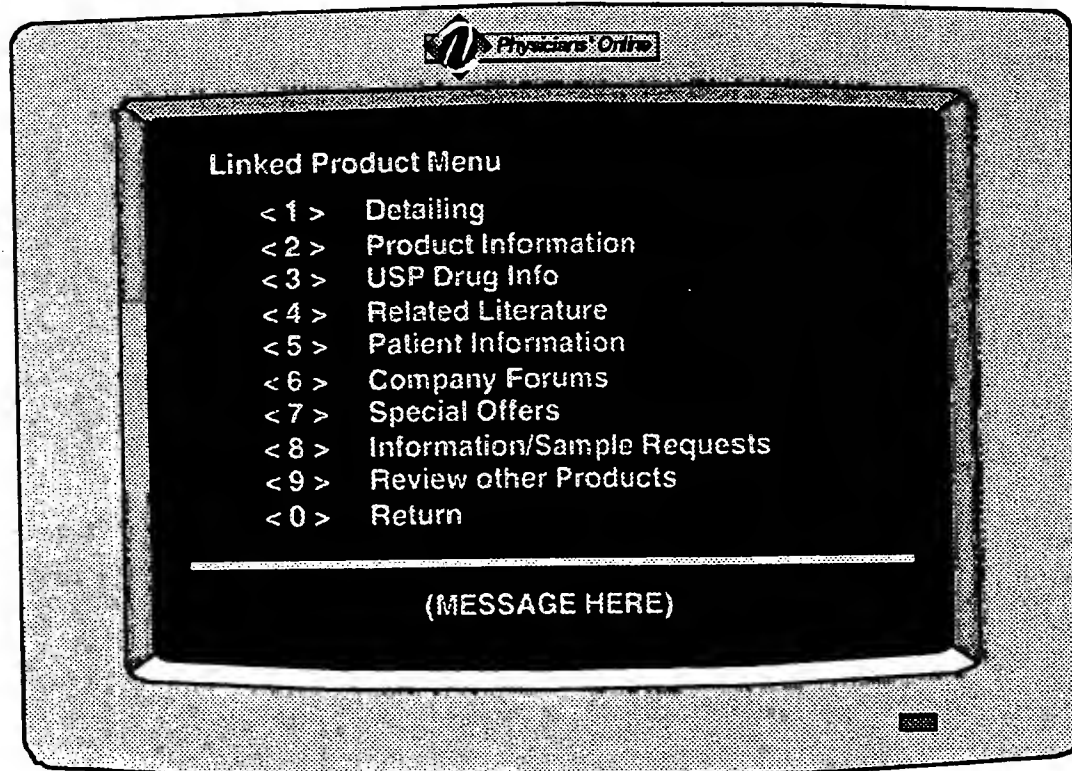
Transforming Advertising into Information: Linkages, Targeting, & "Smart" Ads

Online advertising can be targeted by any demographic characteristic down to the specific physician. Messages are targeted not only through "static demographic links" but also through dynamic and intelligent "context-sensitive links" and "prescribing-practices links."

For example,
a cardiologist sees heart drug ads (static links) and if he is doing a literature search on depression, antidepressant drug ads (context-sensitive links) are also displayed.

When prescriber-level prescription data is linked to our membership profile data, *Physicians' Online* can also target advertising by prescribing behavior. *Physicians' Online* is the first medium to unleash the power of direct prescriber-level targeting.

Additionally, online advertising is linked to full drug disclosure information, including FDA required product information, USP drug information, relevant medical literature, and pharmaceutical detailing & fulfillment services. Ads can be reviewed and their links explored at any time. After reviewing ads, online activities are resumed right where the user left off.



Physicians see only relevant advertising, and pharmaceutical companies are only charged if their ads are actually viewed. Thus, *Physicians' Online* provides the pharmaceutical industry with a cost-effective, fully-accountable, non-coercive, risk-free, "Pay-per-View" medium that targets market segments down to specific prescribers, while simultaneously providing physicians with useful clinical information on demand, at point-of-need, and free-of-charge. The advertisements themselves become an additional source of useful information for physicians, since the advertising now relates to their individual practice needs and is not just another irrelevant distraction to endure.

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Strategic Significance of "Optional" Advertising

Members are not required to view ads and can turn them off at any time. However, without the advertising option turned on, they assume the full cost of the information services provided. Also, non-prescription writing professionals, institutions, and the public-at-large may use the system at any time, without advertiser support, at rates competitive with other online information services.

Making online advertising "optional" is a subtle but strategically critical step to win the general acceptance of the medical profession. Physicians resent and resist using any product or service that requires them to view advertising. (Physician resistance to coercive advertising methods has been well-demonstrated by the failure of *Physician Computer Network* to achieve any significant market-share.) Making online advertising optional shifts the decision and responsibility to the individual physician. In other words, if online advertising is mandatory, physicians want to turn it off. If you make it optional, physicians will tend to leave it on. The availability of *Physicians' Online* without advertising also allows physicians to "save face."

Also, "Optional" advertising allows medical societies to endorse *Physicians' Online* without implying any endorsement for online advertising. The choice to view advertising is left to the individual physician.

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Our Technology

MEDLINE Search Interface

Physicians' Online has made "Search Interface Design" a strategic priority since the vast majority of physicians are not computer-sophisticated. Even experienced physician-users can be misled by their own literature searches. Studies show that with the current generation of MEDLINE search systems, search quality relates to the degree of user-experience with the given retrieval system -- with trained medical librarians consistently out-performing even the most experienced physicians. It is this "user-dependent search quality" that text-retrieval systems must address first, before physicians can reliably relinquish their dependence on MEDLINE search intermediaries such as medical librarians.

By using the most advanced text-retrieval technology available, our simple English MEDLINE search interface enables even novices to perform better searches than most "text-retrieval experts" can using other systems. *Physicians' Online* is co-developing the most sophisticated, yet easy-to-use, online MEDLINE search interface available, under an exclusive agreement with ConQuest Software Technologies, Inc., a leader in advanced text-retrieval software, using their patented text-retrieval technology. By integrating well-demonstrated advances in Natural Language Processing (NLP) and Concept Indexing (CI), *Physicians' Online* has the most powerful, yet easy to master, search interface available.

This technology allows both novice and sophisticated physician-users to query MEDLINE, and other online databases, using standard English sentences instead of having to construct complex Boolean search strategies required by other search systems. All a physician has to do is type a question in plain English. The sentence is analyzed for its key concepts, a search strategy is constructed, and then all the relevant abstracts are retrieved from the database. The retrieved abstracts are then ranked in terms of relevance to the initial query. This process results in the most relevant and complete literature search possible with little variability in search quality between experienced and inexperienced users.

For physicians who feel more comfortable doing literature searching "the old-fashioned way," standard Boolean search methods are also fully supported.

Communications Software

Physicians' Online has taken the best features of existing online systems and combined them into a comprehensive online system which is easy-to-use, menu-driven, and can be accessed by any computer using standard communications software or our dedicated software package. Our online system software is being developed by Sybase, Inc. and Coconut Computing, Inc. (developers of the leading graphical online Bulletin Board System (BBS) -- COCONET).

Central Computer System Design

The company's computer system exploits the latest advances in SQL Client/Server technology on a distributed UNIX-based workstation network. Software enhancements and new product modules are developed and implemented incrementally. As the demand for online services grows, computer hardware is added incrementally to increase capacity and preserve system performance.

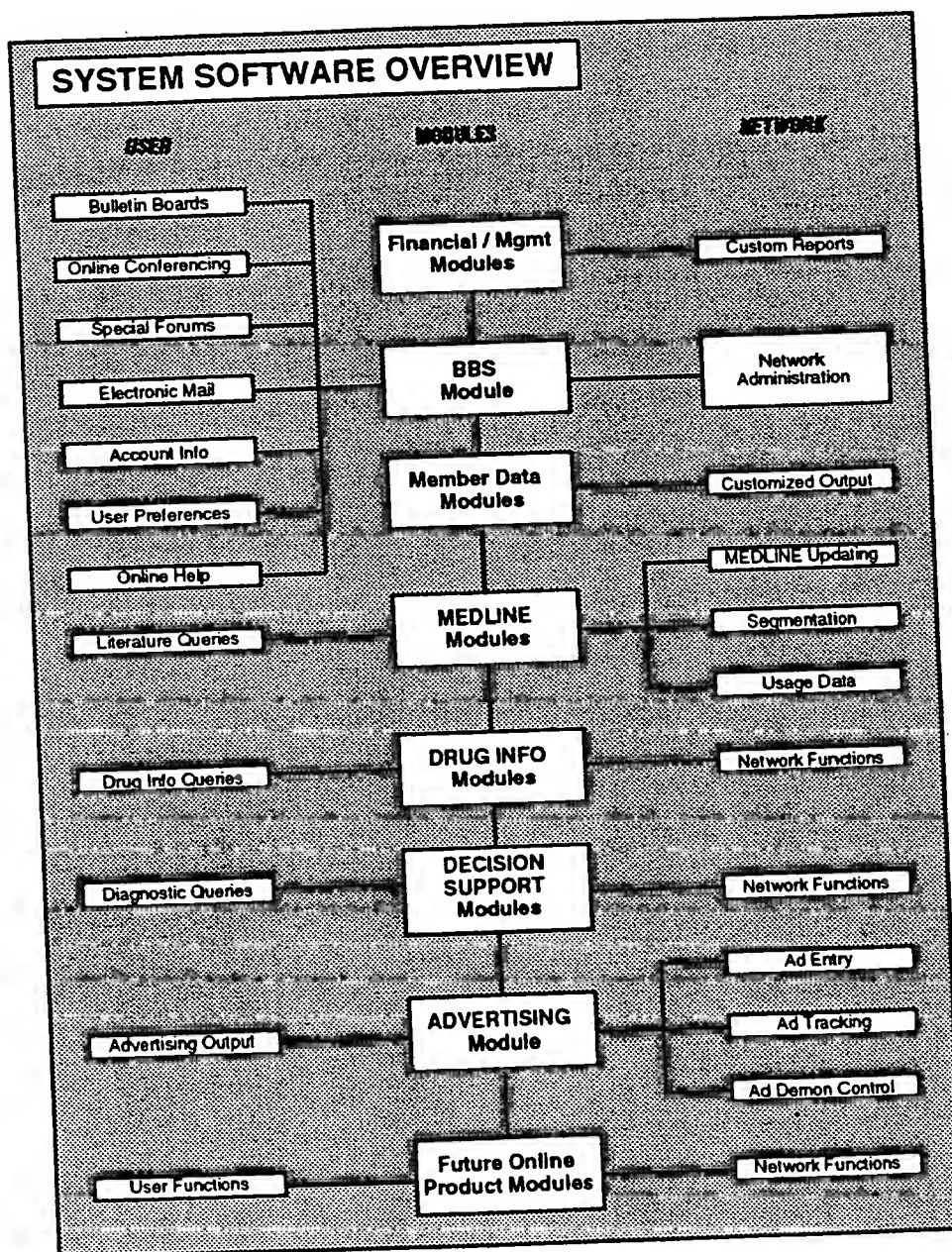
By using these state-of-the-art technologies, *Physicians' Online* has the most advanced yet easy-to-use online text retrieval system and communications network. *Physicians' Online* delivers information more cost-effectively and with higher performance and quality than any

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other existing online service which relies on older mainframe-based technology, awkward and time-consuming Boolean search methods, and clumsy user interfaces.

System Software: Modular Design Philosophy

System software requirements are sorted into functional modules which are designed to integrate seamlessly on a UNIX platform. Modular design allows for rapid and incremental implementation of system features and information products by various independent development teams and vendors.

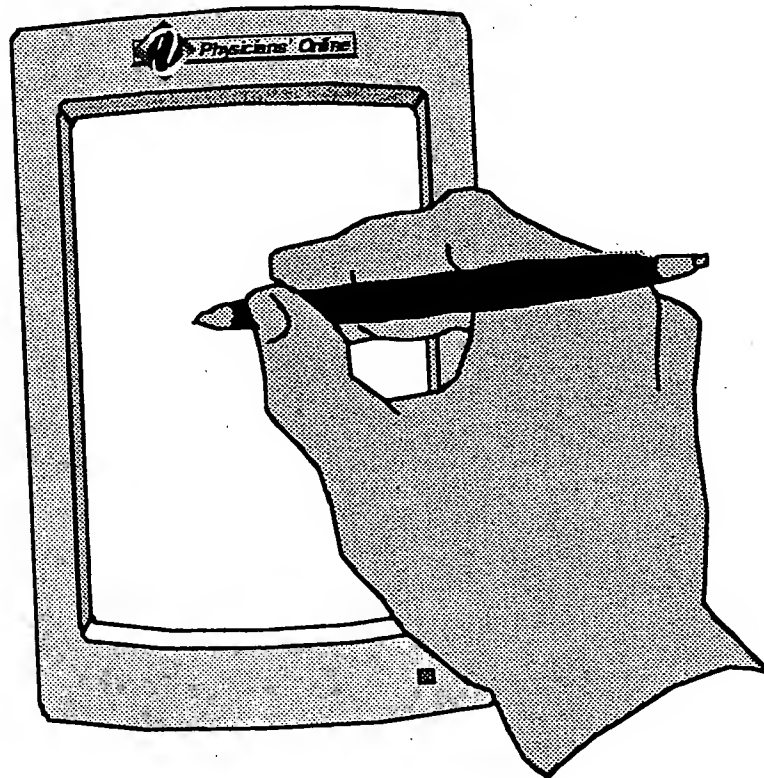


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Phase II Technology:

Personal Digital Assistants as "Smart Electronic Prescription Pads"

To increase points-of-entry into our integrated electronic information and communications environment and to maintain control of the physicians' "Electronic Desktop," *Physicians' Online* will rely on an emerging new class of electronic devices known as "Personal Digital Assistants" (PDAs). PDAs are small, handheld electronic devices that intelligently assist users in capturing, retrieving, organizing, and communicating information and ideas -- exactly how physicians spend most of their time. These devices will enable *Physicians' Online* to expand physician demand for our online services through convenient mobile access and to facilitate the implementation of our Phase II Prescription Management System.



Made possible through the convergence of numerous digital and telecommunications technologies and the ability to miniaturize electronic devices, first generation PDAs, such as Apple's Newton, are positioned as low-cost pocket-sized electronic notebooks equipped with unique user-interfaces, Personal Information Management (PIM) software, and built-in access to both telephone and cellular data networks. Using pen-based operating systems, PDAs can understand handwritten commands and can be used for freeform notetaking, drawing, calculating, scheduling, list making, and communicating. Built-in telephone and cellular communications provide easy mobile access to online information and communications services and allow remote sending and receiving of faxes and other electronic documents.

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Although the future of PDAs lies in true "wireless" communications, cellular data network technology, standards, and infrastructure are not yet adequate to support a national health care information and communications network. In the meantime, using standard telephone data network technology, *Physicians' Online* will introduce specially configured PDAs to be placed next to physicians' telephones. These PDAs act as *Physicians' Online* terminals and "Smart Electronic Prescription Pads."

By seamlessly integrating all the information relevant to making informed therapeutic decisions (including relevant formularies, price lists, drug information, and potential drug interactions) at the "point-of-sale," our "Smart Electronic Prescription Pads" and personalized prescription management software intelligently automate the prescription-writing, tracking, and fulfillment process to facilitate cost-effective therapeutic decision-making. As full-featured communication terminals, our PDA can access all of our other online information products and services as well.

Using PDAs, *Physicians' Online* will revolutionize medical practice by offering up-to-date online information and other network services to physicians on-demand anytime anywhere. *Physicians' Online* is well-positioned to market these devices to the medical profession. The current generation of pocket computers are merely toys for gadget-minded physicians who use them for electronic scheduling and phone books. But with a remote communications link to *Physicians' Online*, PDAs have universal appeal as complete clinical workstations. As personal remote terminals, they will even obviate the use of medical pager systems. When bundled with Personalized Information Management (PIM) software for physicians, our powerful online clinical tools will become a "Standard of Care" and a powerful membership incentive.

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IV - The Market Strategy

The Key to Failure

Previous efforts to develop pharmaceutical-supported electronic information networks for physicians (e.g., Fisher-Stevens' PHYCOM, *Physician Computer Network* (PCN), and the soon-to-be-unveiled Whittle Communications' *Medical News Network* (MNN)) all appear to suffer from their lack of insight into the unique information needs of physicians. While these efforts have excelled at raising pharmaceutical advertising commitments, they have failed to win any significant physician following. Their existence is based on the acute marketing needs of the pharmaceutical industry rather than any solid information product design or implementation program.

This is hardly surprising, since these services were all conceived by advertising & marketing executives, not by physicians. Their founders were well-positioned to recognize and satisfy true pharmaceutical marketing needs, but not to recognize and satisfy true physician needs. The unique needs of physicians appear to have taken a back seat to the needs of pharmaceutical companies. A successful advertising vehicle needs an audience, not just advertisers. This disregard for the physician has led them to a costly strategy of "creating a market" for products & services that serve non-existent physician needs.

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FROM: HON. U.S. SEN. FRANK CHURCH

The Key to Success

Physicians' Online is a powerful and sophisticated information & communications service designed by physicians for physicians.

Physicians' Online was founded by a physician who established a hospital-based electronic medical information center and observed first-hand how physicians actually use electronic information resources in the clinical setting. Real information needs of physicians were identified and served by providing convenient in-hospital access to high-quality information products.

The three types of information products used most by physicians are --

- (1) medical literature databases,
- (2) diagnostic decision-support programs, and
- (3) drug information databases.

Five key barriers limiting computerized information use by physicians are --

- high cost,
- lack of convenient access,
- steep learning curve,
- lack of physician awareness, and
- lack of physician time.

Physicians' Online addresses these barriers by -- making the service entirely free-of-charge; improving access through strategic placement of on-site terminals; making *Physicians' Online* easy-to-use with a menu-driven Graphical-User-Interface and simple English search commands; increasing physician-awareness through publicity, advertising, on-site terminals, pharmaceutical company co-marketing, and medical society sponsorship; and decreasing the time required to use these resources by increasing their performance and making their access conveniently available at points-of-need in the clinical environment.

Strategies to Overcome Utilization Barriers

Barrier	Strategy
Price	<ul style="list-style-type: none"> • FREE
Convenient Access	<ul style="list-style-type: none"> • "Information Vending Machines" • Communications Software / Hardware
Ease of Use	<ul style="list-style-type: none"> • User-Friendly Menu-Driven GUI • Simple English Search Interface • Customer Support
Physician Awareness	<ul style="list-style-type: none"> • Publicity • Medical Society Sponsorship • Member Evangelism • Advertising • Telemarketing • Direct Mail • Co-marketing
Physician Time	<ul style="list-style-type: none"> • Maximize Utility • Maximize Convenience • Personal CME Credit log • Become the "Standard of Care"

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Offer a Well-known Information Product with Established Physician Demand -- MEDLINE

Unlike previous efforts, *Physicians' Online* does not have to "create a market" for new products and services. *Physicians' Online* starts by delivering a well-known information product (MEDLINE) to physicians, free-of-charge, using standard online information service technology. It is so well-known to physicians that "MEDLINE Search" is synonymous with "Literature Search." MEDLINE is the electronic information product used most by physicians today.

We don't have to "create our market" -- it already exists. Currently, physicians use MEDLINE about 3,000,000 hours per year.

Our physician-oriented market strategy centers on capturing an important -share of this existing physician demand as well as significantly expanding total demand through our "Strategies to Overcome Utilization Barriers," as outlined above. By tapping into this large and established physician demand for MEDLINE, *Physicians' Online* quickly builds sufficient system demand and, therefore, online advertising revenue, to generate positive cash-flow and establish *Physicians' Online* as a routine part of patient care. Having secured this stable MEDLINE customer-base, we will build a comprehensive national medical information & communications service by incrementally introducing additional products and services.

The Risks

Our implementation plan minimizes investor risk while maximizing the growth potential of *Physicians' Online*.

Product development risk is minimized by using established technology from leading third-party software developers, information providers, and systems integrators. Modular software design enables independent development teams and vendors to rapidly design and implement system features and products. These modules are integrated incrementally on a reliable high-speed computer platform running UNIX. Information products are licensed from third-party providers who are paid based on actual physician use. The information providers are responsible for maintaining their own online products.

Physician marketing risk is minimized by initially targeting the MEDLINE market. By offering the best version of MEDLINE, free-of-charge (while other services charge \$18 to \$45 per hour), we not only capture the bulk of this market but significantly increase its total demand by increasing both the number of users and individual usage. With a current physician demand of about 3 million hours per year, positive cash-flow is achieved with only 15 - 20% market-share for this single product. Publicity during the beta-testing stage further leverages our physician marketing efforts. We win medical society sponsorship by recruiting these groups to serve on our Medical Society Advisory Board and by creating society-specific forums on *Physicians' Online* that are maintained free-of-charge. The American College of Physicians (ACP) (60,000 members), the American Academy of Family Physicians (AAFP) (70,000 members), and the American College of Cardiology (ACC) (28,000 members) are our initial targets. These societies represent physician specialties with the highest prescribing rates -- together, these physicians account for over half of all US prescription sales.

Pharmaceutical marketing risk is minimized by securing online advertising commitments before making the service available to physicians nationally. Fortunately, *Physicians' Online* does not have to "create a market" for online pharmaceutical advertising either. *Physician Computer Network* and *Medical News Network* have already demonstrated such a market exists. We have identified potential allies who service the micromarketing needs of the pharmaceutical industry. *Physicians' Online* provides a medium which naturally complements their micromarketing services by providing true physician-level targeting as well as a new source of prescriber-level psychometric data. During our product development phase, we are recruiting five pharmaceutical companies to serve on the Pharmaceutical Advisory Board. As initial sponsors, they gain substantial goodwill from the publicity

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Physicians' Online

generated and are given special co-marketing opportunities such as putting their message on each terminal or software start-up screen and getting a time-limited exclusive right to distribute on-site terminals through their hospital-based sales forces. They also have influence on our system development and a head start on the learning curve of a significant new marketing medium.

Competitive risk is minimized by keeping the development stage secret, launching an aggressive and pre-emptive "first-strike" market strategy to gain early market-share (control of the "Physician Desktop"), and retaining that market-share through our dedication to membership/customer service, our large installed-base of dedicated on-site terminals, and medical society sponsorship. Our launch strategy leverages our pre-emptive "First-Mover Advantage" over potential competitors. Control of the "Physician Desktop" creates a significant barrier to potential competition. And, as a comprehensive national medical information & communications network dedicated to the needs of physicians, readily accessible, easy-to-use, and free-of-charge, *Physicians' Online* presents a formidable barrier to potential competition.

Our Competition

The introduction of *Physicians' Online* has a significant impact on five distinct groups --

- I MEDLINE Providers,
- II Consumer Online Services,
- III Medical Online Services,
- IV Pharmaceutical Marketing Media
- V Pharmaceutical Micromarketing Industry

Our future is largely dependent on how effectively we anticipate and pre-empt competitive responses and our ability to establish symbiotic relationships.

I - MEDLINE Providers

MEDLINE is an information product created and maintained by the National Library of Medicine (NLM). NLM's mission is to improve patient care by having MEDLINE widely used by physicians. Although access to MEDLINE is provided via NLM's own network (MEDLARS) and dedicated communications software (Grateful MED), NLM also licenses MEDLINE to commercial online networks, CD-ROM distributors, and private institution-based networks.

The five major commercial online providers include --

- Maxwell Online (BRS Information Technologies),
- PaperChase (Beth Israel Hospital),
- Dialog/Knowledge Index (Knight-Ridder),
- Medis (Mead Data Central), and
- US HealthLink.

MEDLINE is also available from several CD-ROM distributors including --

- Aries Systems,
- SilverPlatter,
- Dialog,
- BRS,
- Cambridge,
- EBSCO,
- and others.

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Current vs Potential MEDLINE Market Size

Since the NLM is not authorized to release the breakdown figures of licensing fees paid by private information vendors, the total MEDLINE market size must be estimated.

In 1991, NLM collected MEDLINE licensing fees for a total of 876,000 online hours from commercial networks. NLM's own system provided an additional 324,000 hours of MEDLINE service, but since most physicians use Grateful Med software when they use the NLM's system (which reduces online "connect" time to 1/4 of the total time spent doing a search), the NLM really provided over 1,000,000 hours of online MEDLINE. 3729 CD-ROMs were sold domestically in 1991. We estimate these CD-ROM systems contributed at least another 500,000 hours of MEDLINE use. NLM also provides unlimited-use site licenses to a few institutions, so it is not possible to estimate their contribution to total MEDLINE demand.

Since most MEDLINE searching is done either by physicians themselves (70%) or for physicians by librarians (25%), we know the total physician demand for MEDLINE in 1991 was around 3,000,000 hours. Commercial online systems charge \$18 to \$45 per hour and CD-ROM systems cost from \$700 to \$3000 per year. So the total MEDLINE revenue collected in 1991 was somewhere between \$35 and \$45 million.

MEDLINE Market Size

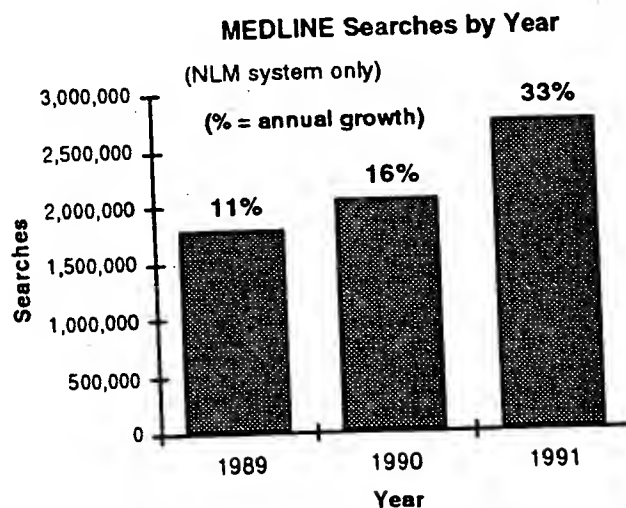
	Current	Potential
Physicians using MEDLINE	50,000	>500,000
Physicians with personal online search accounts	35,000	>500,000
% Searches done by physicians themselves	70%	100%
Total MEDLINE use (hr/yr)	3,000,000	>10,000,000

As discussed earlier, several factors limit the use of information resources by physicians including -- cost, ease of use, accessibility, physician time, and physician awareness. These are the same barriers that limit MEDLINE use. The gradual erosion of these barriers has lead to a steady growth in MEDLINE use and physicians are doing more of their own literature searching. Medical schools and hospital training programs are now required by certifying boards and credentialing committees to make computerized literature searching available on-site.

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Current Growth in MEDLINE Use

The NLM has issued 31,000 search accounts to physicians as of April, 1992. Growth rates in MEDLINE use can be estimated by examining the number of searches performed on NLM's system by year. Note the accelerating annual growth rate in MEDLINE use -- from 11% in 1989 to 33% in 1991. This trend suggests that *Physicians' Online* will facilitate MEDLINE growth on top of a pre-existing growth spurt.

MEDLINE Market Segments

Segment	Description	# MD	% MD
1	Physicians currently using MEDLINE themselves.	50,000	8 %
2	Physicians currently using MEDLINE search intermediaries.	50,000	8 %
3	Physicians not using MEDLINE but have access to computers.	150,000	25 %
4	Remaining high-priority physicians as identified by the pharmaceutical industry.	50,000	8 %
5	Remaining physicians.	300,000	50 %

Each MEDLINE market segment differs in terms of its computer-sophistication, previous exposure to MEDLINE, and ability to use MEDLINE and other computerized information resources in medical practice. A different approach is needed to market to each segment. These marketing issues, as well as other ways to segment our physician market, are addressed in detail in our *Physician Marketing Plan*.

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*Physicians' Online*Online Pricing Strategy and MEDLINE Demand

In the consumer online services industry, total market size can be measured in terms of total online hours. However, total online hours are really created by the number of users and their individual usage rates.

For online systems, there are basically three approaches to pricing --

- Pay-as-You-Go (or Fee-Per-Use),
- Fixed-Fee-for-Unlimited-Use, and
- Free with Advertising Support.

"Pay-as-You-Go" is a constant disincentive to any user. The clock is constantly running up the fee. To minimize expense, individuals try to limit online time by careful planning before getting online or using programs that automate online activities through pre-processing (CompuServe's *Navigator* and NLM's *Grateful MED* are two examples). This pricing method is a constant drag on a growing market.

"Fixed-Fee" strategies are designed to attract high-volume users (market-share), not increase the total number of users. The fixed-fee pricing remains a barrier to casual users, but for established high-volume users, the savings are obvious. Users are now free to work online without the pressure of a running up a large bill. On one hand, total market size is increased in terms of increased total use. On the other hand, total revenues are depressed and the number of new users hasn't increased.

"Free" strategies which link online service to other revenue sources such as advertising do the most to increase total market size by both increasing the use per user and the number of users. All high-volume users start as casual users. Once price is removed as a barrier, then the underlying utility of the service becomes the major force limiting its utilization.

Alternative Online Pricing Strategies

Pricing	Individual Use	Number of Users	Total Demand
Pay as You Go	↓	↓	↓
Fixed Fee	↑	↓	↔
Free with Advertising	↑	↑	↑

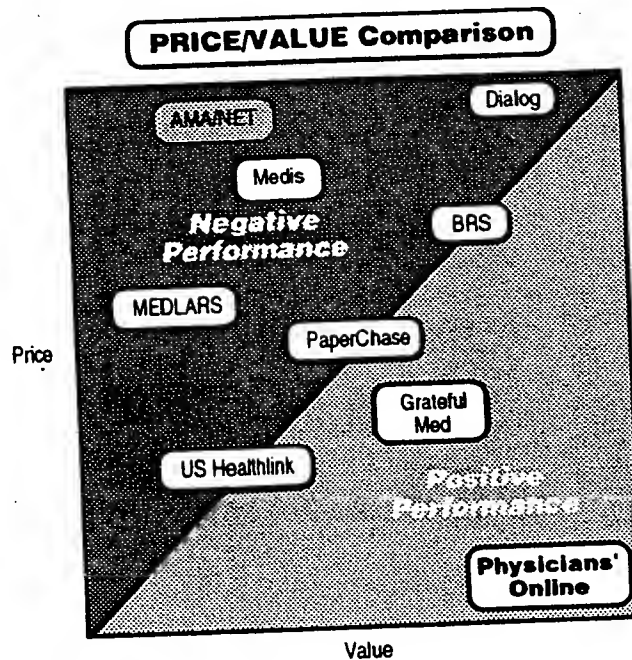
Clearly, there is enormous growth potential for MEDLINE use by physicians. As noted previously, the gradual erosion of several key barriers are contributing to the current growth. In the past, usage fees have been the major factor limiting MEDLINE growth. As with other online systems, the same pricing issues apply to the MEDLINE market. While there is still tremendous growth opportunity in the MEDLINE market, both in terms of individual use and number of users, current MEDLINE providers are competing over existing high-volume users through price-cutting without increasing the number of causal users. So at a time when MEDLINE use is taking off, total MEDLINE revenues are actually falling. By offering MEDLINE for free, *Physicians' Online* will capture most of the existing MEDLINE users as well as create an expanded market by converting non-users into users.

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The Vulnerability of Online MEDLINE Providers**Online MEDLINE Source Comparison**

ONLINE SERVICE	SEARCH PERFORMANCE		USER INTERFACE	PRICE	VALUE
	Speed	Quality	Ease of Use		Perform:Price
MedLars	XXX	XXX	X	\$\$\$	X
Grateful Med	X	XXX	XXX	\$	XXX
BRS	XXX	XXX	XXX	\$\$\$	XX
PaperChase	XXX	XXX	XXX	\$\$\$	XX
Dialog	XXX	XXX	XX	\$\$\$	X
Medis	XXX	XXX	XX	\$\$\$	XX
US Healthlink	XXX	XX	XXX	\$	XX
Physicians' Online	XXX	XXXX	XXXXX	FREE	XXXXXX

Without pharmaceutical advertiser support or technical advantage, only a loss-leader coupling of MEDLINE to other online products or services can effectively compete with *Physicians' Online*. However, since MEDLINE is currently over 70% of the demand for these services, it is unlikely that any other product or service could generate sufficient revenue to support this approach.

Medical Online Services Comparison

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The Vulnerability of CD-ROM MEDLINE Providers**MEDLINE Source Comparison: Online vs CD-ROM**

MEDLINE Source	NO Start Up Fees	NO Expensive Equipment	NO Fee Per Use	NO Subscription Fees	Current Automatic Updates
ONLINE	✓	✓		✓	✓
CD-ROM			✓		
Physicians' Online	✓	✓	✓	✓	✓

The CD-ROM MEDLINE market exists only because of the expense of online systems. CD-ROM systems require substantial initial hardware expense and ongoing expense for subscription updates. However, these expenses are fixed and not related to usage so they offer the most savings to high-volume MEDLINE users. Online systems have lower start-up costs and higher per use fees, so online systems offer lower overall cost to low-volume users. CD-ROM systems tend to be most cost-effective for institutions while online systems tend to be most cost-effective for individuals.

In recognition of this fact, CD-ROM vendors have sought to differentiate themselves with other value-added features such as text-retrieval performance, ease-of-use, and Graphical-User-Interfaces. However, by eliminating the cost of MEDLINE and adding our sophisticated, yet easy-to-use, graphical search interface, *Physicians' Online* eliminates the CD-ROM's main competitive advantages over online systems. MEDLINE will have to be bundled as a loss-leader with other CD-ROM products in order to remain competitive. Again, lack of demand for these other products makes this a nonviable option. Only some institutional sites and heavy-users with substantial investments in existing hardware and software will remain a possible CD-ROM MEDLINE market.

NLM vs Physicians' Online

NLM is not ultimately threatened by *Physicians' Online* since our missions are complementary -- to increase total MEDLINE use. By making MEDLINE readily accessible, easy-to-use, and free-of-charge, we significantly increase the total MEDLINE market size and the NLM shares in our success with increased total licensing revenue.

Summary

Clearly, *Physicians' Online* presents the most immediate threat to commercial MEDLINE vendors. We effectively challenge these current products based on the high-quality of our MEDLINE product, with its simple, yet sophisticated, search interface and its price (FREE). Our user-friendly graphical PC software, additional online products & services, and our dedicated on-site terminals further leverage our competitive position and create additional barriers to protect our share of the "Physician Desktop."

We have a clear "First-Mover Advantage" by having a pharmaceutical advertising support mechanism in place as well as a technical development lead time. Our technical lead time is further preserved by our exclusive software development arrangement with ConQuest Software Technologies. ConQuest is the current technical leader in the text-retrieval market. Their sophisticated text-retrieval software out-performs all traditional Boolean systems and they have a technical lead time over rival text-retrieval systems of 2 to 3 years with their patented software technology.

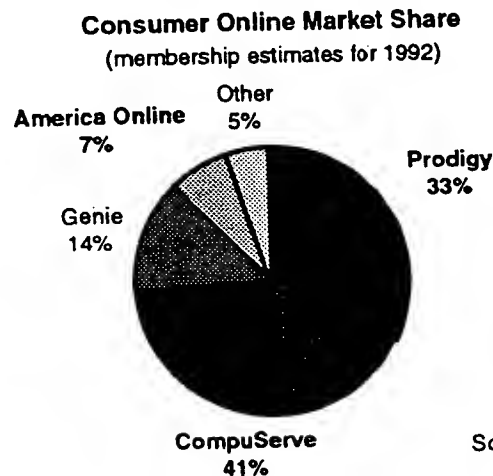
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II - Consumer Online Services

The Big Three

The consumer online services market is both emerging and highly competitive. What was once a relatively fragmented industry has coalesced into an industry made up of three large, mass-market information services. The "Big Three" include *Prodigy*, *CompuServe*, and *America Online*. Each has hundreds of thousands of individual subscribers and draws their substance from hundreds of information providers and distributors.

America Online, although the smallest of the three, is the clear technical leader. It has a sophisticated and easy-to-use Graphical-User-Interface (GUI) which is mouse and menu driven and which runs smoothly on Windows, Macintosh, and DOS. *Prodigy* and *CompuServe* are both developing similar interfaces to compete with *America Online*.



Source: Alex. Brown

Mass Market vs Niche Market Strategies

Following a traditional "publishing" business model, the Big Three offer a wide variety of low-value/low-cost information products designed to capture the widest range of users possible. Marketing strategies are directed toward increasing both market-share and market size (increasing both the number of users and their individual use).

While the Big Three are battling over the emerging mass-market, other online services (such as Dialog, Delphi, Lexis, BRS, PaperChase, Newsnet, Dow Jones) are quietly capturing niche professional markets. These services offer high-value/high-cost specialized information products that service specific needs of carefully targeted users. On a financial basis, targeted media consistently out-perform mass market media. This is because the information provided is more valuable to the target audience and the advertising is more valuable to companies targeting that audience.

Window of Opportunity: The Medical Niche

Following a similar niche market strategy, *Physicians' Online* offers high-value/high-cost information products to a specific high-value target audience. *Physicians' Online* doesn't present an immediate threat to the current crop of commercial online systems. However, the window of opportunity to capture our niche market may narrow if the Big Three shift their marketing strategies from mass markets to niche markets of higher value information products and services.

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Although we have both a technical edge and pharmaceutical marketing support mechanism in place, these companies have deep pockets and many other products and services they could bundle or use as loss-leaders. We will use our lead time to leverage our "First-Mover Advantage" to control the "Physician Desktop" and erect effective physician market barriers.

III - Medical Online Services

AMA/NET

Several previous attempts to create online information services for physicians are now defunct, including MINET, PHYCOM, and AMA/NET. In 1981, MINET (Medical Information Network) was announced by GTE Telenet. In 1983, MINET went online and offered three primary services -- MEDMAIL, PHYCOM, and AMA/NET. MEDMAIL was essentially a repackaging of GTE's TELEMAL service for the medical profession. PHYCOM was a pharmaceutical advertiser-supported online service that failed to develop any products or services that could attract physician use. AMA/NET offered a comprehensive menu-driven package of high-quality but hard-to-use services and databases designed to appeal to physicians. MINET and PHYCOM quickly died from lack of physician demand due, in part, to the immature PC market. With the AMA's financial backing, AMA/NET lingered on until 1990, when the AMA claimed it could no longer justify shouldering the ongoing losses.

One can argue that the AMA abandoned AMA/NET prematurely. The AMA was certainly well-positioned to leverage its large membership and computer use by physicians was clearly on the rise. However, AMA/NET never had more than 40,000 members -- and less than 5,000 were ever "active" (i.e., used the system more than once). Why? Because AMA/NET was a "Fee-per-Use" network -- with charges ranging from \$38 to \$42 per hour!

US HealthLink

With the demise of AMA/NET in August 1990, there were no online services dedicated to the medical profession until the Spring of 1992. Hard-core physician-users still had the MEDSIG Forum on CompuServe, but it's relatively expensive and doesn't offer information products and services designed to appeal to most physicians.

Then, in the Spring of 1992, a resurrected version of AMA/NET, renamed US HealthLink, went online. No longer affiliated with the deep pockets of the AMA, US HealthLink is set up as a cooperative venture between the Oregon Health Sciences University (OHSU) and the IEI Network, Inc., an organization formed by former AMA/NET staff. Otherwise, US HealthLink appears identical to the old AMA/NET. When a user signs on to US HealthLink, he is greeted by the same old "klunky" interface and the same comprehensive, but hard to use, package of services and databases. The list includes MEDLINE, EMPIRES Literature Service, MEDICOM Drug Interaction Service, COMTEX Medical News Service, Bulletin Boards, Electronic Mail Service, Clipping Service, etc. In addition, there is a selection of services from the MGH/Harvard computer network including DXplain, a diagnostic decision-support tool developed at MGH.

The MEDLINE offered is a stripped-down version developed by OHSU. It has a clumsy interface and only offers abstracts back to 1987 (A complete version of MEDLINE would go back to 1966). EMPIRES (Excerpta Medica Physicians Information Retrieval and Education Service) Literature Service is derived from EMBASE, the biomedical bibliographic database maintained by Elsevier Science Publishers. This database is much smaller than MEDLINE -- only covering 320 journals since 1989. However, it has a better search interface than the OHSU version of MEDLINE.

So physicians familiar with AMA/NET feel right at home with US HealthLink. What has changed is the market strategy. Instead of "Fee-per-Use," US HealthLink offers physicians a "Fixed-Fee-for-Unlimited-Use" ("Unlimited" here means less than 4 hours per month). US HealthLink charges a fixed \$35 per month (\$420 per year) for "Core Products & Service" plus

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additional fees for "Premium Services" (Support/FaxAlert), Faxes, Full-Text Reprints, Personal Clipping Services, and communications cost in excess of 4 hours per month.

US HealthLink vs Physicians' Online

The more our system is used, the more money we make ... the more their system is used, the more money they lose!

US HealthLink derives its revenue from a fixed-fee charged monthly to its subscribing physicians. This strategy superficially appears to benefit physicians, however, under closer inspection, US HealthLink does not truly encourage physician use. From US HealthLink's perspective, the most profit is generated by selling monthly contracts (which generate revenue) but never actually delivering the service (which generates cost). And, as discussed previously, this pricing strategy captures market-share of existing high-volume users, but does nothing to attract new or casual users.

Physicians' Online offers the same products and services as US HealthLink, albeit at much higher-quality and for FREE with advertising. Cost is no longer an issue. Since advertisers are charged only if the ads are actually viewed ("Pay-per-View"), the more physicians use the system, the more money *Physicians' Online* makes. In other words, we are motivated to make our system more useful and responsive to our members needs. US HealthLink makes money selling monthly contracts to physicians who don't use the system. We make our money when our system is used.

Although US HealthLink is a competing full-service online information system designed for physicians, *Physicians' Online* has several key advantages, including --

- (1) Our MEDLINE is complete and has the best search interface on the market.
- (2) Our on-site terminals make *Physicians' Online* conveniently accessible.
- (3) Our dedicated communications software is a user-friendly "Graphical-User-Interface" (GUI).
- (4) Our reliance on "Pay-per-View" advertising, rather than membership fees, enables *Physicians' Online* to profitably encourage use by every physician - new and casual users, as well as high-volume users.
- (5) Our system delivers superior product, performance, and service and is priced to be free-of-charge with advertising or competitively priced without advertising.
- (6) Our system has the backing of professional societies.
- (7) Our system delivers its service to "members" not "customers."

US HealthLink provides a favorable focus for comparison and allows us to "piggyback" our membership marketing efforts. Since US HealthLink subscribers pay monthly, not annually, there is no penalty for switching immediately to *Physicians' Online*. Without a major technical overhaul to improve their user-interface, overhaul their MEDLINE module, and shift their market strategy to an advertiser-supported system, we expect to acquire most of their subscribers.

US HealthLink has approximately 5,000 members and has established a gateway connecting an additional 2,000 Physician Computer Network (PCN) members. *Physicians' Online* is well-positioned to capture the US HealthLink customer-base, in part, because we have an implementation lead time of at least six to twelve months that provides ample time to erect the required barriers. In addition, US HealthLink may be constrained contractually, financially, and bureaucratically by their OHSU relationship.

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Features: US HealthLink vs Physicians' Online

Feature	US HealthLink	Physicians' Online
Cost	\$420 / year	FREE
Free online time	up to 4 hrs / month	unlimited
Complete MEDLINE	NO (1987 to present)	YES (1966 to present)
Boolean Search Interface	YES	YES
Graphical User Interface	NO	YES
Mouse / Key Control	NO	YES
NLP Search Interface	NO	YES
Relevance Ranking	NO	YES
MEDLINE Journal Club	NO	YES
Free Clipping Service	NO (\$10 / folder / month)	YES (unlimited folders)
Diagnostic Decision-Support	DXplain	QMR
Disease Synopsis	DXplain	QMR
Drug Interactions	MEDICOM	USP
Complete Drug Information	NO	YES
Full Featured BBS	YES	YES
Menu Driven	YES	YES
Electronic Mail	YES	YES
Advanced FORUM Features	NO	YES
"Live" Conference Rooms	NO	YES
Text File Downloading	YES	YES
Software Downloading	NO	YES
Uploading Supported	NO	YES
FAX options	YES	YES
Topical Forums	YES	YES
Medical Society Boards	NO	YES
Pharmaceutical Company Support Boards	NO	YES
24 Hour Support Line	NO	YES
Online Help	YES	YES

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F I L E S

Physician Computer Network (PCN)

Physician Computer Network (PCN) is attempting to establish a nationwide network linking office-based physicians electronically with a variety of health-care organizations. As stated in their Second Quarterly Report for 1992: Physician Computer Network, Inc. --

operates a national, interactive, two-way and verifiable electronic communications Network linking its office-based Physician Members and the healthcare industry. This interactive Network provides both physicians and healthcare organizations, such as hospitals, clinical laboratories, Medicare, insurance carriers, pharmaceutical manufacturers, managed care providers and others with a cost-effective means of information exchange which enhances practice administration and increases productivity...Our goal remains to create the largest, on-line and interactive Physician Network in America.

As originally conceived, PCN offered physicians a complete medical office management system -- including software, hardware, training, and support -- free-of-charge. In return, physicians were required to view 90 minutes of interactive advertising per month and allow PCN to retrieve confidential patient information for resale as "anonymous, aggregate clinical data."

The Four Related Business Segments of PCN

1 - NETWORK SERVICES

PCN offers a comprehensive medical office management system designed to computerize patient records and to generating patient billing, insurance claims billing, and wide variety of financial and clinical reports.

2 - INTERACTIVE MEDIA

PCN offers the pharmaceutical industry an interactive, verified, "Pay-per-View" advertising vehicle that physicians are forced to view for 90 minutes each month.

3 - COMMUNICATION DATA-LINKS

PCN offers an online network connecting physician offices to other health-care organizations including -- hospitals, clinical laboratories, managed health-care providers, claims clearinghouses, and insurance companies.

4 - CLINICAL MARKETING DATA

PCN offers clinical data and market research gathered from the physicians' patient records for purposes of obtaining health-care treatment practices and observational & post-marketing surveillance reports about pharmaceutical products.

Market Resistance to PCN

Founded in 1988, the PCN concept attracted strong backing from IBM, several pharmaceutical companies, Lehman Brothers, and others. Four years and \$50 million later, there are still less than 2,000 installed systems and PCN is running out of money. In addition, PCN continues to receive a cool reception from physicians. Why?

- (1) Physicians resist using any media that forces them to view advertising. PCN insults physicians by requiring them to spend 90 minutes per month viewing advertising and taking quizzes on the ads viewed.

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- (2) Busy physicians value their time as much as their money. So the financial savings have to be substantial for physicians to eagerly sign-up for the privilege of viewing 90 minutes of advertising per month.
- (3) The PCN medical office system differentiated itself from competition based on price alone. Who are PCN's competitors? A rapidly growing and highly competitive medical office system market that offers many inexpensive and high-quality alternatives to PCN. Over 50 major medical office systems are available from well-established companies with a combined installed-base of over 50,000 users. These software packages are distributed and serviced by the growing legions of small service-oriented medical office system companies. These small "Value-Added-Resellers" (VARs) specialize in the medical office system market and offer customized packages of hardware and software to meet the individual needs of their client physicians. These local vendors offer a personal approach to customization and service. Vendors can take advantage of the wide variety of high-quality low-cost alternatives to IBM hardware (computers, drives, monitors, printers, etc.) and pass these savings on to their client physician. In short, they bundle hardware, software, customization, training, service, and ongoing support, as complete system solutions that effectively compete with PCN in terms of price and quality.
- (4) PCN has targeted high-patient volume practices. For large practices, computerization pays for itself. Custom computer solutions are a small fraction of overall practice costs. Savings are immediately realized through better practice management and financial controls. Revenue growth is realized through improved claims processing and patient accounts tracking. So, for high volume practices, the small savings afforded by PCN is a false economic benefit. Large practices can not afford to not have the best possible computer system customized to their individual practice needs. And with the proliferation of lower-cost medical office systems, computerization is cost effective even for solo-practices. Small local service-oriented vendors are best positioned to meet the medical office system needs of physicians and are the major threat to PCN.
- (5) PCN preys on the widespread computer ignorance of physicians. PCN offers a single solution to simplify choice for busy physicians. Although a simple choice, PCN is not the best choice. Computer savvy physicians realize there is no simple solution. A computer system must meet the unique requirements of each physician. Fortunately, computer ignorant physicians are not isolated from the computer-sophisticated. Physicians are rapidly becoming more computer-savvy, in part, reflecting the computerization of society in general. And, as discussed before, physicians are trained to use their peers as an information resource. If a physician feels uncomfortable with computer technology, he will rely on peers with more computer knowledge to guide his purchase decisions. Physicians who have become early adopters of computer technology have a tremendous influence on their peers and the future direction of medical computing in general. Therefore, by failing to win the enthusiasm of computer-sophisticated physicians, PCN has lost tremendous market leverage.
- (6) Since PCN's introduction, more strings have become attached to the "Physician Member Agreement." Today, in addition to the 90 minutes of mandatory advertising viewing each month, physicians must pay up to \$2,760 per year and sign a guarantee to continue lease payments should PCN fail. Where's the incentive?
- (7) Finally, physicians avoid any activity that potentially violates patient confidentiality. As stated in their annual report: "PCN, by virtue of our Physician Member Agreement, has the right to market the anonymous, aggregate clinical data contained in the databases of its Physician Members."

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How can patient confidentiality be preserved if PCN has regular access to patient records? And even if PCN could convince physicians that confidentiality is preserved -- Can PCN convince the public? Do physicians really want patients to know their personal medical records are being traded for some computer equipment? For most physicians, it's just not worth it. These controversial ethical issues have irreparably distanced PCN from the public, the medical profession, and the pharmaceutical industry.

PCN: A Viable Advertising Medium?

Initially, *Physicians' Online* competes only with the INTERACTIVE MEDIA segment of PCN. Strangely, this is the most underdeveloped portion of PCN. A viable advertising medium must combine both --

- (1) an *information component* (content) -- tailored to the needs of a target audience and
- (2) an *advertising component* -- tailored to the needs of advertisers targeting the same audience.

As previously mentioned, PHYCOM was a failed attempt to establish an advertiser-supported online network because it failed to develop any information content other than advertising. Similarly, PCN has a powerful advertising component without providing any information content. In fact, the primary user of the system is the physician's office staff, not the physician. So how can you get physicians to view advertising without delivering information content? PCN "solves" this problem by contractually obliging physicians to view their ads. Basically, PCN pays physicians to view advertising. This heavy-handed approach is direct but creates a medium that has no content other than coercive advertising.

Physicians' Online takes a more traditional approach to attracting its audience. By providing physicians with information products and services they can use, *Physicians' Online* use becomes a natural component of the health-care delivery process. By moving to the background and being targeted to the individual user, *Physicians' Online's* advertising is transformed into another useful information resource that is always available when needed -- not a 90 minute interruption every month.

Network Building Strategy

While both PCN and *Physicians' Online* share an ambitious mission, the real issue is -- "How to get there?" Two distinct network building strategies have emerged -- PCN vs *Physicians' Online*.

The PCN strategy relies on the installation of complex and costly office management systems that link physician offices to the PCN network. These systems are primarily used by office staff. Physicians only use the system for the mandatory monthly viewing of advertising. While this strategy produces contractually captive customers with high system-switching costs, their competitors have a large installed customer-base with similar high system-switching costs. Since PCN's ability to capture existing market-share is limited, PCN is forced to compete with many well-established medical office system vendors in order to capture a share of the remaining physician offices yet to be computerized. With a limited number of captive physicians, PCN faces an uphill battle in attracting the many participants and the capital needed to establish a true national medical information & communications network.

The *Physicians' Online* strategy relies on the installation of simple and low-cost software in existing computer systems and the placement of low-cost and easy-to-use dedicated terminals at convenient sites in the health-care environment that link to the *Physicians' Online* network. *Physicians' Online* is used exclusively by physicians and provides information & communication services on demand and at point-of-need. *Physicians' Online* provides a very attractive alternative for the existing installed-base of competing online information

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providers who currently face low switching costs. In turn, *Physicians' Online* creates high customer switching costs due to its pricing, technology, products, alliances with multiple organizations, CME credits, membership services, and support. With an ability to serve every practicing physician, *Physicians' Online* can attract the critical mass of participants and capital needed to establish a true national medical information & communications network.

Physician Market Strategy: PCN vs Physicians' Online

	PCN	Physicians' Online
Founder Background	Advertising	Medicine
Primary System Use	Office Management	Clinical Information
Primary User	Office Staff	Physician
Online Advertising	Dedicated Interactive Advertising Sessions	Shown simultaneously with any online product or service
Primary Physician Use	Mandatory Viewing of Ads	Elective Information Retrieval
Sophistication of Initial Users	Low	High
Advertising Price	High	Low
Cost to Users	up to \$2,760/yr	Free
Ad Exposure / User	Limited	Unlimited
Potential Audience Size	15,000 Office Systems (Stated company goal for 1995) (< 2% of Physicians)	Every Physician (>500,000) (100% of Physicians)
Potential Users / Computer	1	Unlimited
Company Investment / User	\$ Thousands	Negligible
Ad \$ / Hr / User to Break-even	\$ Hundreds	\$<10
Multiple Market Strategy	Competitive	Alliance Building
Medical Office System Market Positioning	Competitive	Complementary

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Additional Obstacles for PCN

PCN's stated goal is to install over 15,000 office systems by 1995. Even if PCN manages to convince enough physicians to sign-up, serious obstacles remain --

- (1) Management distraction due to recurring financial restructuring requirements.
- (2) Loss of flexibility due to complex financial structure.
- (3) Limited financial capability due to excessive debt and impending liquidity crisis.
- (4) Existing bad-will with "stakeholders" -- including physicians, pharmaceutical companies, data-link partners, and investors.

Stakeholders	Issues
Physicians	<ul style="list-style-type: none"> • Financial Commitment • Public Relations • Ethical Issues regarding confidential patient data • Coercive and Insulting Advertising Format
Pharmaceutical Companies	<ul style="list-style-type: none"> • Failure to meet charter sponsors' expectations • Limited Market Penetration • Financial Wherewithal
Data-Link Partners	<ul style="list-style-type: none"> • Warrants issued have lost value • Viability: New Program Credibility • Financial Wherewithal
Investors	<ul style="list-style-type: none"> • Deteriorating stock price • Impending defaults on debts • Where will additional capital come from?

In Summary

The key to success for any national online health-care network is to win the support of the medical profession. Using "free" medical office systems as its entry point, PCN has attempted to build physician support through bribery. Due to poor financial performance, PCN has been forced to add physician fees, thereby eliminating the "free computer" incentive. In a highly competitive medical office system market, the PCN system must now compete based on quality and service, not cost. So far, PCN has spent over \$50 million to connect less than 2,000 office sites to their network. After spending over \$25,000 per office, PCN still has less than 5% of the medical office system market.

As part of its shifting strategy, PCN is now placing a greater emphasis on other network capabilities in order to diversify revenue sources beyond "Pay-per-View" advertising. No wonder. With a network reaching less than 1% of physicians, PCN's ability to build an effective online advertising medium is limited. Without physicians, PCN has no product. To be an effective advertising medium, you need subscribers. PCN's key to success remains -- it must attract more physicians.

In the face of negative publicity, unanswered ethical issues, floundering finances, and a cool reception by physicians and the pharmaceutical industry, Physician Computer Network has a precarious future. However, PCN's difficulties provide *Physicians' Online* with valuable lessons and validate our unique physician market strategy.

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We foresee that, due to --

- (1) the large Net Operating Loss carry forward of \$50 million,
- (2) existing contracts with service providers, and
- (3) small but significant installed-base of users (less than 2,000)

at some point, PCN could be an attractive acquisition target for *Physicians' Online*.

Medical Society Online Systems

Most medical societies are exploring ways to offer online bulletin board systems (BBSs) for their members. Although more cautious than the AMA, the American College of Physicians (ACP) has been a leader in this area. They have been influential in dramatically improving the quality of medical abstracts found in MEDLINE by creating a logical format which is now the standard followed by most medical writers. They recently started RESNET, a online system for medical residents that uses a subset of the CompuServe system. In April 1992, the ACP introduced the "ACP-NLM Flat Fee Program." ACP members can have virtually unlimited access to the NLM network via Grateful Med software for only \$200 per year. Although plans have not been made public, ACP was recently granted a trademark for "ACP Online." Clearly they are preparing for a more comprehensive online system.

As AMA/NET clearly demonstrated, medical society online systems face the same barriers to success as other online systems. *Physicians' Online* enables medical societies to safely establish their own online systems on our network. For a participating medical society, we develop and maintain their Medical Society Forum on *Physicians' Online*. Medical Society Forums are complete BBS systems and have all the same features available on *Physicians' Online* including their own membership, E-mail systems, bulletin boards, libraries, etc.

Note: Medical society support for *Physicians' Online* does not imply medical society endorsement for online advertising. *Physicians' Online* functions the same whether or not the advertising-support features are turned on. The choice of whether or not to turn on the advertising is left for the individual physician to decide. Physicians may chose to turn off the advertising features at any time and assume the cost of services provided.

IV - Pharmaceutical Marketing Media

Pharmaceutical Marketing Market

In 1991, \$63 billion of prescriptions were written by less than half a million physicians -- over \$150,000 per physician. Pharmaceutical companies currently spend approximately \$5 billion dollars annually on the sales and marketing of drugs and an additional \$2 billion dollars on the distribution of free drug samples -- over \$15,000 per physician. These marketing and sales activities include --

- sales calls to physicians by manufacturers' sales representatives,
- professional journal advertising,
- direct mail and telemarketing communications to physicians,
- distribution of free drug samples to physicians,
- marketing and sales research, etc.

The largest prescribing specialties are internal medicine, family practice, general practice, and cardiology. Together, these specialties accounted for over half the prescription sales in 1991. In 1961, there were 656 drugs available by prescription in the US -- today there are over 8,000. This has created a marketing "din," as a plethora of products are vying for the limited attention of busy medical professionals. Increasing competition, falling profit

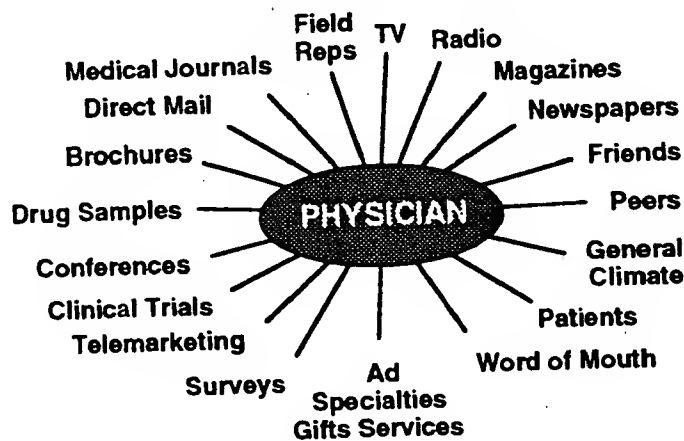
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margins, and increasing marketing costs have created an acute need for more careful market segmentation and targeting of pharmaceutical marketing campaigns.

Current Pharmaceutical Marketing Mix

Physicians' Online competes with other advertiser-supported media to secure a share of the pharmaceutical marketing pie. Our objective is to establish *Physicians' Online* advertising as a generally accepted part of the standard "Pharmaceutical Marketing Mix." Our medium is positioned to complement, not compete, with other media in the overall pharmaceutical marketing mix.

The Current Pharmaceutical Marketing Mix

The extremely competitive nature of pharmaceutical marketing assures rapid acceptance of any new medium that effectively targets physicians. Pharmaceutical marketing appears to be ruled by a herd psychology: "So go the Competition -- So go We." Pharmaceutical companies can not neglect any marketing method that might give competitors an edge.

The merest possibility of a new medium attracts widespread interest by the pharmaceutical industry. Witness *Medical News Network* (MNN), scheduled for launch in the Spring of 1993, Whittle Communications claims to have raised over \$100 million in pharmaceutical advertising commitments for this new multimedia project. To date, MNN can't claim a single physician user. And, even in the face of negative publicity, unanswered ethical issues, floundering finances, and a cool reception by physicians, *Physicians Computer Network* (PCN) successfully completed an IPO for \$36 million in 1991. PCN has already spent over \$50 million to connect less than 2,000 office sites to its network -- over \$25,000 per physician!

So, new media products will continue to proliferate as long as there remains such a large market opportunity. The media companies that serve this industry are well-capitalized. They are all well-positioned to leverage their existing pharmaceutical client-base to sponsor new media opportunities as they arise.

As a relatively undercapitalized "dark horse" entrant, *Physicians' Online* must leverage its "First-Mover Advantage" by rapidly creating barriers to ward off these well-positioned and well-capitalized competitors. Only one barrier can really protect us --

a completely satisfied physician membership.

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The key to our success is **ABSOLUTE DEDICATION TO "CUSTOMER" SERVICE --**

- (1) Physicians must feel like "members" not "customers."
- (2) Physicians must view *Physicians' Online* as a quality information service that maintains the integrity of its information products and clearly separates the needs of physicians from the demands of pharmaceutical advertisers.
- (3) We must nurture our ongoing member relations by offering only the highest quality products, services, and support.

Our satisfied members become our most potent marketing weapon by recruiting new membership, leveraging our marketing into new clinical sites, and securing our market-share against future competition. ("Why switch? *Physicians' Online* is great, friendly, free, and ours." "How many high-quality, free-of-charge, medical information services do you need?")

As a national "medical information utility," our goal is to position *Physicians' Online* as a "natural monopoly" by leaving no opportunity for competition to exploit. A steady stream of new products & services, dedication to membership service, professional society endorsements, and a large installed-base of on-site terminals make *Physicians' Online* difficult to duplicate, even for large well-heeled media companies.

Whittle Communications' Medical News Network (MNN)

While little detail has been revealed about Medical News Network (MNN), company officials confirm that Whittle will begin pilot testing an advertising-supported "News and Continuing Medical Education" system for physicians in the spring of 1993. This non-interactive broadcast information system will be delivered via television to the physician's office.

Consistent with Whittle's previous efforts, MNN will be an extremely costly endeavor with the most significant investment being in the areas of programming and broadcasting. It appears the system will broadcast its programming in a flexible format similar to "Pay-per-View" television in order to register physicians for CME credits and audit audience participation. Presumably, MNN will match its advertisers with their intended audience.

Potential Obstacles for MNN

While Whittle has pre-sold all the advertising slots for the first year, MNN faces a number of physician and advertiser acceptance issues --

- (1) Given the peripatetic nature of patient care, the physicians' office may not be the most suitable place for such viewing. In fact, physicians may prefer to continue to receive such programming through the existing lunch or vacation conference formats.
- (2) Physicians may prefer to earn CME credits in a more interactive or self-directed educational environment.
- (3) If physicians can't flexibly schedule MNN viewing to coincide with their busy schedules, this system will fail from lack of viewers -- indicative of yet another advertiser-supported service that was insensitive to the needs of physicians.
- (4) Since all the advertising space for the first year is sold-out, many companies will be excluded from participation. This exclusion creates an opportunity for another competitor, like *Physicians' Online*, to attract interest.

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An Expanded Market Opportunity Created by MNN

Given the cost of developing and maintaining the MNN system and given that the system requires changing physicians' habits, it is not clear MNN will prove cost-effective for advertisers. While MNN publicity will increase general awareness of alternative media and promote pharmaceutical company acceptance of new media, *Physicians' Online*, with its cost-effective micro-marketing approach and sophisticated precision-targeting features, will greatly benefit from Whittle's investment and educational efforts.

V - Pharmaceutical Micromarketing IndustryEmerging Pharmaceutical Micromarketing Industry

Pharmaceutical marketing in the 1990s is trending towards micromarketing. The four characteristics making the pharmaceutical market conducive to micromarketing are:

- (1) *measurability* -- the potential and actual market size of the specific drugs being marketed can be determined;
- (2) *accessibility* -- physicians, the purchasing decision maker in this industry, can be targeted;
- (3) *profitability* -- pharmaceutical companies spend \$7 billion annually in the US on sales and marketing and drug sampling; and,
- (4) *stability* -- the pharmaceutical industry is recession-resistant.

The principal objectives of micromarketing and sales research information are --

- (1) to enable pharmaceutical manufacturers to *compensate* their sales representatives based on geographic sales or prescription activity,
- (2) to *quantify* individual product sales and prescription levels, and
- (3) to *direct* their marketing and selling activities to specified or selected groups of physicians.

Currently, approximately \$500 million annually goes towards the purchase of prescription-drug information. Two companies have historically dominated the prescription-drug information market: IMS and Walsh International. Both companies offer drug-information products based on pharmaceutical sales data segmented by zip code. In other words, they provide prescribing information that is aggregated geographically, not at the individual physician level. This creates a market opportunity for prescriber-level data.

MMG (Medical Marketing Group) and PMSI (Pharmaceutical Marketing Services, Inc. -- a Walsh International spin-off) are both emerging companies that are setting new standards in pharmaceutical micromarketing. They have both developed physician-specific profiling databases. By slicing their data in a variety of ways, they have developed a series of useful marketing information products that enable pharmaceutical companies to direct their efforts to influencing the prescribing habits of specific physicians. These sophisticated pharmaceutical marketing support tools, based on prescription data, track the prescribing behavior of any targeted market segment down to the individual physician.

Limited Supply of Media Targeting Specific Physicians

While these new prescriber-level marketing tools provide a powerful means to target pharmaceutical marketing efforts, the supply of media targeting physicians at an individual level is limited.

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Currently, prescriber-level information is only useful in --

- directing sales representatives,
- direct mail campaigns, and
- telemarketing efforts.

Prescriber-level targeting tools are available but the supply of true prescriber-level targeted media is limited. In fact, the prescriber-level data market leader, MMG, is attempting an aggressive acquisition strategy designed to increase the demand for their services by creating a new supply of media which target physicians based on their prescriber-level database.

The need for more careful market segmentation and targeting of marketing campaigns have lead to a proliferation of both traditional and newer non-traditional mediums to reach physicians. Drug companies have provided increased advertising support for newer marketing mediums especially those which target their markets more selectively. This has caused an increasing shift of the \$400 million dollars per year devoted to traditional journal advertising, as pharmaceutical firms become increasingly receptive to these newer advertising vehicles. They are actively looking for new means to reach physicians.

("Medical publications under siege from 'new media'" *Publishing News*, May 1990, p. 44.)

This trend is our market opportunity. *Physicians' Online* provides a medium which naturally complements pharmaceutical micromarketing services by providing a true physician-level targeted medium. An alliance with a prescriber-level prescription data provider allows us to strengthen our targeting features by including direct "prescription behavior targeting." In addition to targeting by demographics and context, physicians can also be targeted by their specific drug prescribing practices.

Limited Psychometric Data Sources

Pharmaceutical micromarketing companies are also exploring alternate sources of relevant prescriber-level marketing information other than prescription data --

- (1) to enhance the overall predictive value of their marketing tools and
- (2) to decrease their strategic dependence on providers of raw prescription data.

One approach is to add "attitudinal" or "psychometric" data to their products. However, this data is currently compiled from relatively primitive survey data.

Physicians' Online offers a source of proprietary prescriber-level psychometric data that is continuously generated from online user activity. Our prescriber-level psychometric data can be combined with prescriber-level prescription data to create new marketing tools which not only track but also predict physician prescribing behavior.

New Source for Prescriber-level Prescription Data

Initially, *Physicians' Online* will not enter the prescription data market which is currently dominated by IMS, Walsh, and Medco. However, with the advent of hand-held, pen-operated computers with cellular data network capabilities, we are well-positioned to offer prescription fulfillment services and thus become an independent source of prescriber-level prescription data in addition to our psychometric data.

Drug Sampling Services

An estimated \$2 billion worth of free drug samples are distributed annually via drug manufacturers' sales forces. However, increased Federal regulation requires documentation of the final destination of these samples and forces drug manufacturers to track these samples more closely, thus creating another market opportunity. Through our ad linkages, drug detailing boards, and special E-mail offerings, drug sample fulfillment services are conveniently offered electronically to physicians, thus automating both the fulfillment process and the required record-keeping.

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Additional Regulatory Considerations Governing Pharmaceutical Marketing Practices

Pharmaceutical marketing practices have come under increasing scrutiny. Pharmaceutical advertising, marketing, and promotional practices have drawn critical fire during recent hearings held before the Senate Committee on Labor and Human Resources. Legislation strengthening the Food and Drug Administration's (FDA) authority to police drug company promotional activities has been proposed.

In an effort to pre-empt the creation of formal legislation by a gesture of self-regulation, the Pharmaceutical Manufacturers Association (PMA) and the American Medical Association (AMA) issued guidelines outlining acceptable and unacceptable promotional practices. Other professional societies, including the American College of Cardiology (ACC) and the American College of Physicians (ACP), have issued similar guidelines.

AMA Ethical Guidelines on Drug Industry Gifts (adopted December 1990)

Unacceptable gifts

- Cash
- Subsidies for travel, lodging or personal expenses or in compensation of time spent for physicians attending conferences or meetings.
- Payment for token consulting or advisory services.
- Gifts with "strings attached," such as those given in relation to a physicians' prescribing practices.

Acceptable gifts

- Gifts with educational value, such as textbooks.
- Work-related gifts of minimal value: pens, notepads and penlights.
- Subsidies to underwrite the costs of continuing medical education conferences or professional meetings.
- Scholarships for medical students, residents and fellows to attend educational conferences, as long as selection is made by their academic institutions.
- Reasonable compensation and reimbursement of expenses sustained by consultants.
- Modest meals, usually in conjunction with educational programs.

These guidelines have forced the discontinuation of certain practices and the modification of many others.

For example, in 1988, \$165 million was spent by pharmaceutical companies to pay for physicians and their spouses to attend meetings in resort spots such as Monte Carlo and Palm Springs, complete with entertainment such as cruises and golf outings.

Such practices, as well as cash subsidies, clinical "research" grants, and other valuable gifts "with strings attached," have been dramatically curtailed. Leveling the playing field of "unsavory" marketing practices has freed up marketing dollars to invest in other promotional areas.

The FDA is also being pressured to create stricter regulations regarding the degree of product disclosure information included with pharmaceutical advertising. Several studies have pointed to the lack of adequate product disclosure information and the widespread use of dangerously misleading product messages included in many pharmaceutical marketing campaigns.

How do these regulations effect *Physicians' Online*?

- (1) *Physicians' Online* is the only advertising medium that complies with the spirit of FDA disclosure regulations. With *Physicians' Online*, online advertising is not only linked to complete FDA product information but also to relevant medical literature, pharmaceutical detailing databases, independent USP drug information, and fulfillment services.

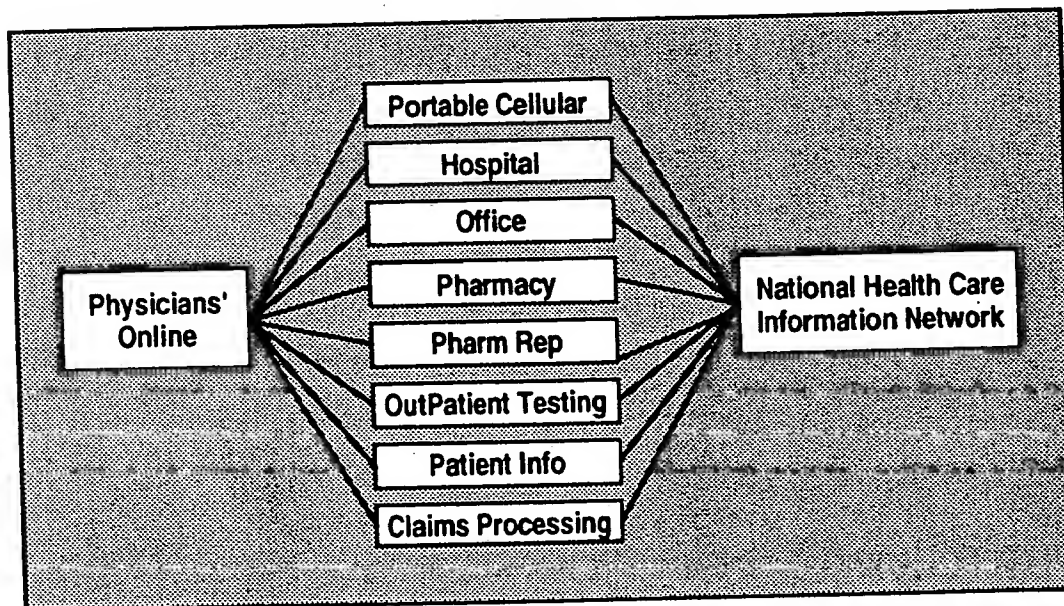
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- (2) *Physicians' Online* terminals and dedicated software are clearly of educational value, so their distribution by sponsoring pharmaceutical companies doesn't violate any ethical guidelines.
- (3) Our online "advertising shell" enables us to clearly distinguish between promotional messages and information products. Our information products are not contaminated, in anyway, by promotional material.

Our Growth Strategy

Online advertising enables *Physicians' Online* to deliver virtually any information product or service, free-of-charge, to physicians, while paying royalties to third-party information and service providers. Our growth is fueled by our strong cash-flow position and our ability to encompass new "micro-information niches" by incrementally adding new products & services and serving new elements in the overall "Medical Information Grid". By connecting medical professionals, pharmaceutical companies, pharmacies, medical information & service providers, hospitals, laboratories, offices, insurance companies, and, ultimately, patients, with a national electronic communications network, *Physicians' Online* becomes a platform-independent "distribution system" which maintains growth by "feeding it" a steady stream of new information products and communication services.

Network Expansion to a Comprehensive Medical Information Utility



Physicians' Online is also well-positioned to leverage its physician membership to exploit the huge market opportunities that will open with the imminent introduction of low-cost, pocket-sized, pen-operated computers able to connect wirelessly to national cellular data networks. Prescription fulfillment services, prescription data, pharmaceutical marketing services, patient laboratory data, insurance claims processing, personal pager services, communications services, FAX networks, etc. will all be within easy striking distance.

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Summary

To provide a comprehensive solution to the overwhelming information retrieval and communications problems of today's physician is both our challenge and our opportunity.

Physicians' Online is dedicated to serve the information and communications needs of physicians and the marketing needs of the pharmaceutical industry.

Physicians' Online initially distributes third-party produced information products and services, on demand, at point-of-need, and free-of-charge, to member physicians while simultaneously providing the pharmaceutical industry with a sophisticated, cost-effective, precisely-targetable, fully-accountable, non-coercive, risk-free, "Pay-per-View" advertising medium.

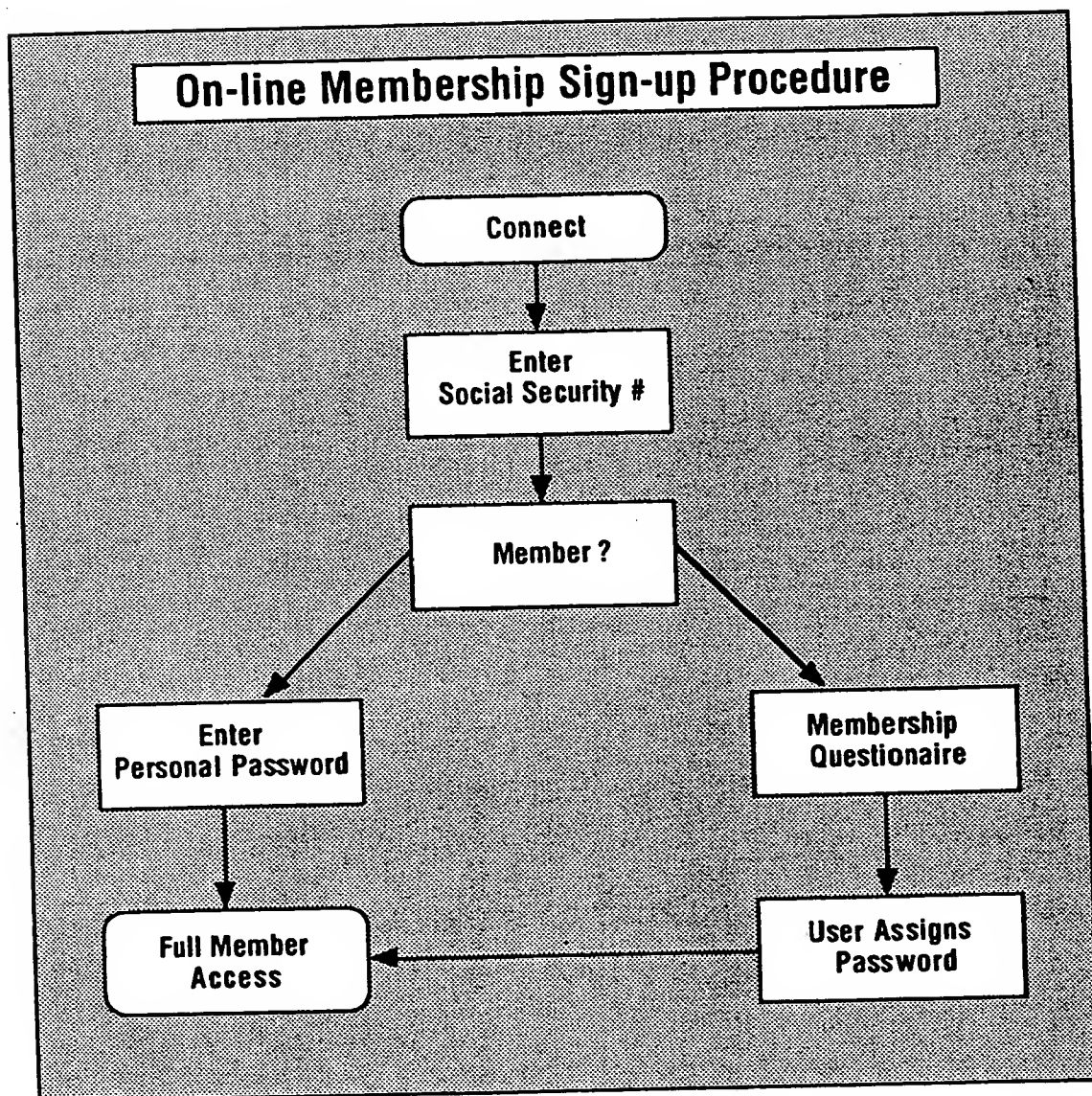
Physicians' Online is well-positioned to become the leading communications conduit through which all health-care transactions are routed.

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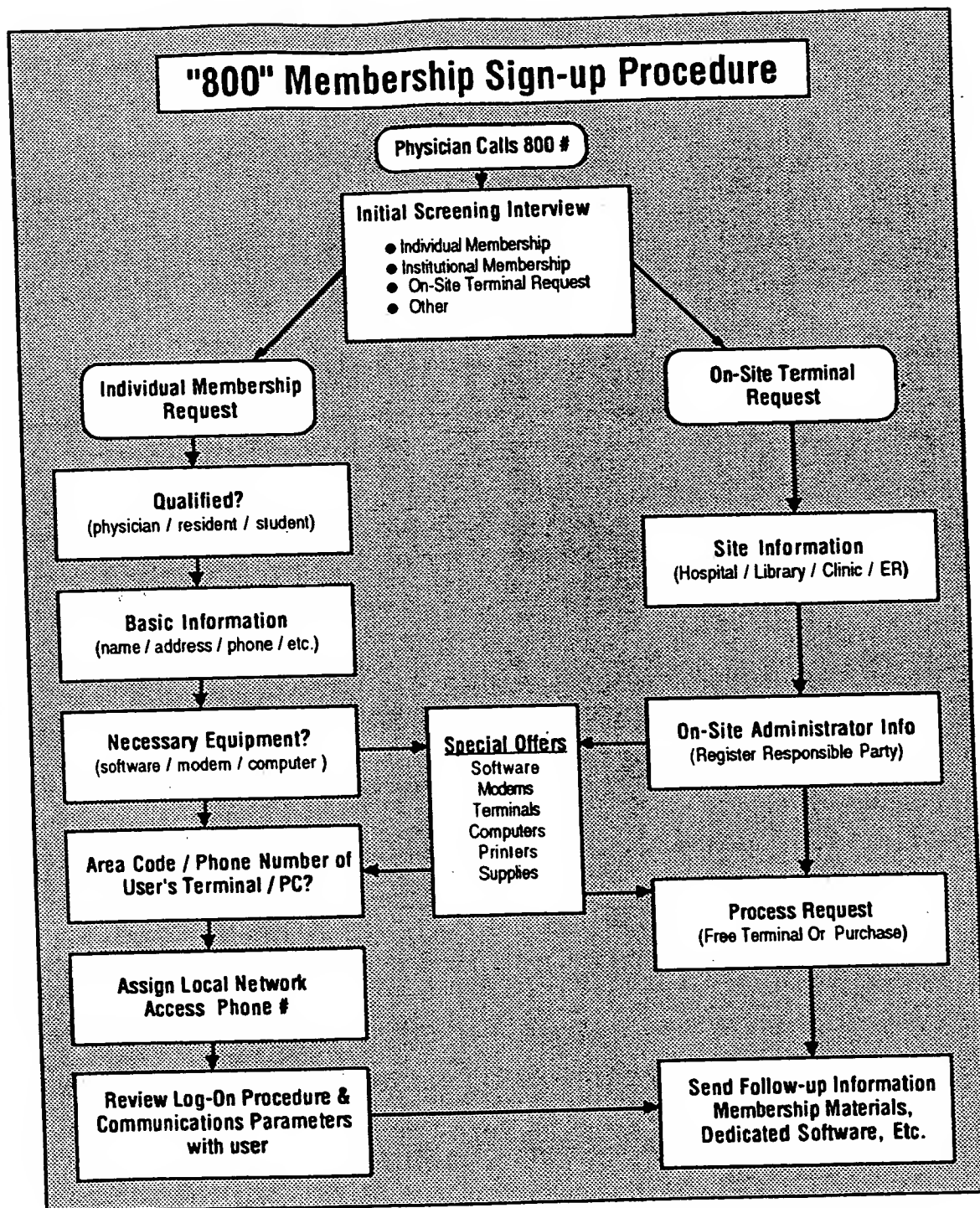
VII - The Appendix

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Online Advertising Features

Features	Benefits
NO RISK Advertising "Pay-per-View" Advertising "No View...No Pay"	<p>Unlike other advertising media, <i>Physicians' Online</i> only charges advertisers for ads <u>actually viewed</u>! If no one views your ad...you pay nothing. True "Pay-per-View" advertising. So you risk nothing by advertising on <i>Physicians' Online</i>.</p> <p>You receive a full accounting of all advertising activity and pay only for what was actually seen by your target audience. This makes <i>Physicians' Online</i> the most cost-effective and fully-accountable marketing medium to target physicians.</p>
Precise Physician Targeting	<p>Each member fills out a complete online demographic questionnaire when he signs on for the first time. Whenever he signs on to the system, he is identified by his membership number (social security number) and password. So the system knows at all times, who is calling and demographically important information about each individual member.</p> <p>For example, if a company wants to market a product just to cardiologists who practice angioplasty in St. Louis, it can selectively "narrowcast" the message to just these individuals.</p>
Precise Message Targeting Messages Tailored to Each Segment	<p>A product message can also be selectively varied by target segment.</p> <p>If a product is used by different specialties for different reasons, the product message can vary depending on who is viewing the ad.</p> <p>In other words, product features of interest to infectious disease specialists can be shown to them while different features can be shown to gastroenterologists.</p>
Cost-Effective	<p>At 7.5¢ per 15 second ad, you get 15 messages guaranteed to be viewed, for the same price as a single letter that is usually thrown out unopened by the same physician.</p> <p>E-Mail messages, at 50¢ each, are less than half the price of a typical postal mailing...and E-Mail is not thrown-out unviewed!</p> <p>Drug detailing databases, at \$18 per hour, are a full order of magnitude less than an average "detailing" sales call which currently costs over \$200.</p>
Receptive Audience -- Suggestible State of Mind	<p><i>Physicians' Online</i> members go online for computerized clinical information. 90% of physician online time is devoted to using clinical information databases. 30% of that</p>

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time is spent on drug information databases. 65% of that time is spent on MEDLINE. 60% of MEDLINE activity involves patient care problems and 40% involves therapy. In other words, physicians are looking for drug or therapy information over 60% of their online time.

So you have a influential physician, staring at a computer screen, actively seeking information about therapy...Not a bad time to suggest a new product or remind him about an old product!

And, as "early adopters", *Physicians' Online* members are, by nature, more receptive to new products and ideas.

Associative Conditioning Tool

Create Powerful "Prescribing Preference" Reflexes in the Minds of Targeted Physicians

Physicians can be conditioned to form mental associative links between a product and a clinical situation. These can be created using online messages which couple a product name with a brief yet descriptive "point line." Using 15 second ads, messages flash into the physician's mind 4 times per minute or 80 times during an average 20 minute MEDLINE search. Although the physicians may not be primarily concentrating on the advertising, the ad changes are always noticed, if only briefly. Through frequent online reinforcements, associative links can be built into the minds of targeted physicians. So, whenever a physician encounters that clinical situation, the associated product comes to mind first.

The essence of effective pharmaceutical marketing is Associative Conditioning -- To be the first product that pops to mind when confronted with a therapeutic decision. What could more powerfully influence physician prescribing behavior than being the first drug to pop to mind? The ultimate "point-of-sale" influence is carried in the mind of the potential customer.

Professional Goodwill

Since *Physicians' Online* is so newsworthy, we anticipate extensive coverage by the medical press. This publicity along with medical society support and early co-marketing efforts, brings high visibility to *Physicians' Online* and its early pharmaceutical supporters.

By being identified as supporters of a service which brings physicians so much for so little, participating pharmaceutical companies enjoy tremendous professional goodwill.

Market Leverage:

Member characteristics

- early adopters
- influential
- receptive
- high prescribers

Physicians' Online members
Extend Marketing Reach

Physicians who regularly use MEDLINE literature search services are "Medical Opinion Leaders" and high prescribers. Their opinions are sought out by their peers since they are assumed to be the most knowledgeable and current with the literature.

Physicians who use computers are "early adopters" of new technologies and products and therefore the trendsetters of their profession. As professional trendsetters, *Physicians' Online* members extend the reach of any marketing

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effort by influencing the rest of the profession. By their nature they are also more receptive to new products and ideas.

By marketing to *Physicians' Online* members, pharmaceutical companies can leverage their marketing dollars by reaching the most influential members of each target segment. So capturing these influential physicians leverages marketing efforts beyond their numbers to the rest of the profession.

Ad-Linked Features --

Electronic --

- Drug Detailing
- Fulfillment
- Customer Support

Online advertising can be targeted by any demographic characteristic down to the specific physician. Messages can be targeted through "static demographic links," dynamic "context-sensitive links," and "prescribing-practices links."

In addition to the automatic linkage to FDA drug disclosure data, pharmaceutical companies can link their advertisements with a number of other features.

Online ads can be linked to --

- relevant MEDLINE abstracts
- full text database of supporting literature
- other online full-text databases
- drug detailing databases
- other drug information databases
- pharmaceutical company forums
- real-time ad response monitoring
- online surveys
- online customer service support
- E-mail to contact the company directly
- Fulfillment Functions
 - drug sample requests
 - detail man follow-up requests
 - further drug information

Ads can be linked to specific MEDLINE abstracts so that a specific ad is shown whenever a specific abstract is retrieved. In addition to static links, dynamics links can be created that link ads to specific search concepts. Whenever a specific concept is invoked by a physician, a specific ad can be displayed (context-sensitive links). Precision targeting transforms online advertising into useful information because ads are now relevant to the viewing physician.

Electronic Direct Marketing

MEMBER/ALERT Services

- E-Mail
- FAX/NET
- Regular Mail

The full range of MEMBER/ALERT services offered by *Physicians' Online* is available for use by pharmaceutical companies. Electronic and direct mail services include E-Mail, FAX/ALERTS, MEMBER/ALERT Postcards, and special direct mail services. Through any of these means, messages can be sent to any demographically definable physician segment.

Direct Physician Communication

In addition to targeting advertising and other electronic messages, full E-Mail and "live" conferencing capabilities allow companies to communicate directly with individual physicians.

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Company Forums

Pharmaceutical company forums allow companies to focus and coordinate their online activities through the use and maintenance of company-specific detailing databases, E-mail services, customer support, fulfillment services, special announcements, bulletin boards, etc.

Single-Sponsor Services

Companies may also exclusively sponsor specific online events such live conferences, special interest information services, etc.

Pharmaceutical Advisory Board

In addition to a responsive customer service and sales support team, pharmaceutical advertisers have an opportunity to directly influence the direction of *Physicians' Online* through membership on the Pharmaceutical Advisory Board.

Company Sales Force Support**Sales Reps Online**

With industry-wide estimates of over \$200 per sales call and limited opportunities to reach busy physicians, any method that cost-effectively increases total physician contact time is valuable to the pharmaceutical industry.

Advertising Specialties

- Membership Packets
- Software
- On-Site Terminals

Pharmaceutical sales reps can have personal online memberships to *Physicians' Online* -- giving them full access to online services including E-Mail, sales call follow-up, advertising placement, etc.

Physicians traditionally receive small gifts from "drug reps" when they make sales calls. Detail men are always looking for low-cost items of value to physicians that convey an advertising message. Free membership packets, software, and dedicated terminals make perfect gifts that pharmaceutical representatives can distribute to physicians and hospital sites in their market territories.

Terminals, membership packets, and software can be further customized with the name of the company, pharmaceutical representative, or any other special advertising or message.

Start-Up Screens on the terminals can be customized to show any message at start-up such as the name of the company donating the terminal. The start-up screen can be used to directing physician to use the online company forum to contact drug reps, get information, order samples, etc.

By encouraging the use of *Physicians' Online*, pharmaceutical reps extend their total physician contact time through the use of electronic mail facilities and other services directed to their specific physician-clients, and generate goodwill in their established and potential customer-base.

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Real-time Market Intelligence

Physicians' Online Psychometric Data Sources

- MEDLINE Database itself
- MEDLINE Usage Data
- Concept Frequency Data
- Advertising Response Data
- Specific Survey Data

Powerful new market research tools can be developed from these new psychometric and market data sources. Our continuous real-time market intelligence provides powerful measures of changing market trends.

Online Test Marketing

Monitoring Online Behavior to
Test and Adjust Market Strategies

Any online behavior, such as utilizing options for more drug information, can be tied to specific message displays. The response rate to different messages can be used to identify and differentiate unique concerns of different market segments. Other promotions and market strategies can be fine tuned using response rate data. For example, does a message which emphasizes an new antibiotic's coverage of gram negative bacteria interest an infectious disease physician more than its low incidence of renal toxicity?

Complete online activity data allows advertisers to test the efficacy of different advertising approaches by monitoring the online behavior of targeted physicians.

MEDLINE Trends

Monitor future medical trends

Using MEDLINE as a starting point, powerful new indices can be constructed and used to generate both periodic and customized reports that monitor changing market trends. For example:

CONCEPT FREQUENCY INDEX

Concept indexes coupled with citation frequency will generate data concerning overall changing trends in the medical literature over time. Shifting concept frequency trends in the medical literature reflect changing future trends in clinical practice. This information identifies early market trends, anticipates changing demand, and recognizes potentially significant new areas of research, as well as new applications of existing drugs. These concept indices will routinely screen the most forward-looking terminology -- for use in advertising and promotions.

AUTHOR/ CITATION FREQUENCY INDEX

Authors of journal articles will be indexed by publications, field of research, etc. This database will generate data on the most influential researchers by various criteria such as area of research, numbers of publications, number of times research is cited by others, etc. By identifying the most influential researchers, research support moneys can be allocated to maximize leverage of research and marketing efforts.

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Online Search Behavior	By tracking what questions physicians are asking, <i>Physicians' Online</i> has a real-time proprietary database of the clinical concerns of physicians which can be analyzed by any demographically definable physician characteristic.
Physician Psychometric Data	<p>This database enables the pharmaceutical industry to track the changing clinical concerns of their target markets and adjust their marketing strategies accordingly.</p> <p>Online search behavior data provides "focus group" type data, but at a greatly reduced cost and higher significance because it monitors what physicians are actually doing...not what they say they are doing.</p> <p>Physician psychometric data from <i>Physicians' Online</i> allows pharmaceutical companies to design effective marketing strategies by developing and marketing products that met the changing concerns and need of physicians.</p> <p>By coupling this data with prescribing practices data, the pharmaceutical industry now has a complete and potent marketing methodology available to them.</p>

Special Direct Online Services	<p>For pharmaceutical companies who want to expand their direct day-to-day control over this new medium, a customized system will allow them online access to monitor advertising activity, place new ads, maintain company forums, process electronic mail, process online fulfillment requests, etc.</p> <p>Full sales force computer network out-sourcing services are also available.</p>
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Dedicated Account Representatives and Customer Service Staff	A dedicated sales staff and customer support team aids clients in tailoring their online marketing activities to meet their specific marketing objectives.
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Account Information	Each advertiser gets an account statement that gives a complete accounting of ads viewed. This report can be customized to yield useful market information.
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Online Surveys	A traditional survey approach can be taken as well. These real-time surveys can be conducted either directly or indirectly. These surveys can be designed quickly and the target audience selected by any criteria with the results available within a few days. The online market survey becomes a simple yet highly responsive management tool.
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Customized Account Information	Special Customized Ad Activity Reports will yield useful market information. For example, "Who actually viewed that ad" can be summarized by any targeted demographic characteristic.
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